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MATERIALS MIND

Issue 27

January 2020

www.iomm.org.my

Institute of Materials, Malaysia

HIGHLIGHTS

- **Coating Fingerprinting**
  - Fingerprinting of Polymeric Coatings
  - FTIR Fingerprinting of Raw Materials for Epoxy Paint Manufacturing
  - Coating Fingerprint Certification: Towards Malaysian and ISO Standards
  - FTIR Fingerprinting for Polymeric and Organic-based Products from (Un)authorized Retailers
- **IMM Year Book**

ISSN 2289-9030

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JANUARY 2020 Issue 27

EDITORIAL BOARD MEMBERS

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Institute of Materials, Malaysia

Electronic copy of Materials Mind can be accessed via www.iomm.org.my under Materials Mind Webpage

INSTITUTE OF MATERIALS, MALAYSIA

(PPM-004-10-11061987)

TO ALL IMM MEMBERS,

NOTICE OF 30th ANNUAL GENERAL MEETING

Notice is hereby given that the 30th Annual General Meeting of IMM will be held as follows:

Venue	:	Junior Ballroom, Intercontinental Kuala Lumpur
Date	:	20th March 2020 (Friday)
Time	:	5.30 pm – 7.30 pm

AGENDA

1. Adoption of the agenda
2. President's address
3. To approve the minutes of the 29th Annual General Meeting (*)
4. To receive and adopt the 2019 report of the council presented by the Honorary Secretary of IMM (*)
5. To receive and adopt the 2019 statement of accounts presented by the Honorary Treasurer of IMM (*)
6. Handing over of Presidency
7. Election of 10 Council Members for 2020-2022 term
8. Tabling the appointment of external auditors for 2020 by the Honorary Treasurer of IMM
9. Appointment of two internal auditors for 2020
10. Any other matters

(*) can be accessed electronically on IMM website (www.iomm.org.my) after 7th Feb 2020.

By order of the Council,
Prof. Ts. ChM. Dr. Melissa Chan Chin Han
Honorary Secretary, IMM

Date: 2nd January 2020

REPLY SLIP

I hereby confirm that I will **be able / not be able*** to attend the AGM above.

SIGNATURE: _____

NAME: _____

ORGANIZATION NAME: _____

MEMBERSHIP NO.: _____

DATE: _____

Please indicate confirmation *via* email to secretariat@iomm.org.my before **12:00** pm, 17th March 2020.

**Delete whichever not applicable.*

ANNUAL GENERAL MEETING PROXY VOTING FORM

I _____(please print name in full) and IMM Membership no. _____wish to record my apologies for absence and hereby appoint_____(please print name in full) and IMM Membership no. _____(or, failing him/her, the Chairman of the Meeting) to act as my proxy at the 30th Annual General Meeting of the IMM.

Signature: _____ Date:_____

This Proxy Voting Form should be returned to the IMM office via email (secretariat@iomm.org.my) before 12:00 pm, 17th March 2020.

FUTURE JOBS WITH INDUSTRIAL REVOLUTION 4.0

VENUE: Junior Ballroom, Intercontinental® KL
165 Jalan Ampang, 50450 Kuala Lumpur
DATE: 20 March 2020 (Friday)

FREE REGISTRATION
FOR IMM AND MBOT MEMBERS
First Come, First Served

The concept of Industry 4.0 is a reality in the modern economy, because innovation and technological development play an important role in each organization. Industry 4.0 significantly changes products and production systems concerning the design, processes, operations and services. Certainly, the implementation of this concept has further consequences for management and future jobs through creating new business models.

This seminar aims to bring different expert speakers from a wide range of industry-leading businesses, to present the key elements and initiatives involved in digital transformation in the future jobs with IR 4.0 industry— via evolving technologies and business case considerations, to issues around change management, software strategies and how to make the leap to full digital transformation.

TIME	AGENDA
2.30 pm – 2.45pm	Registration of delegates / Refreshment
3.00 pm	Welcome Remark by Mohd. Fairuz Bin Mohd Salleh, Chairman of Youth Professional IMM
3.10 pm	Opening Remark by Ts. Mohd Azmi Mohd Noor, President of IMM
3.20 pm – 3.40pm	IMPACT IR 4.0 ON HR DEVELOPMENT Dr. Mohamed Ackiel Mohamed, Senior Vice President Serba Dinamik Group Bhd
3.45pm – 4.05pm	Gajendran A/L. Karunanithi, Senior Executive, Tech Talent Development, MDEC
4.10pm – 4.30pm	Azrin Bin Aris, Director of Products & Innovation TM ONE, Telekom Malaysia
4.35pm	Token appreciation for speakers by President of IMM
4.45pm	Group Photo - End of session / Tea break
5.30pm	30th IMM Annual General Meeting
7.30pm	Networking/Refreshment or Dinner

For more information, please contact :

MATERIALS TECHNOLOGY EDUCATION SDN BHD
Tel: 03 7886 7066 Email: info@mte.com.my

Organised by :
Institute of Materials Malaysia Under Youth Professional Committee

Co-organised by :
Materials Technology Education Sdn Bhd

Sponsored by :
Serba Dinamik Holdings Bhd

Supported by:
Malaysian Board of Technologies

Click Here or Scan the QR Code to Register
Closing Date: 15th March 2020

Materials Mind

NOTICE FOR RENEWAL OF ANNUAL MEMBERSHIP AND SUBSCRIPTION FEES 2020

Dear members,

Notice is hereby given for the renewal of your annual membership for 2020. Please ignore this notice if you have already paid your subscription in advance, or if you are eligible for exemption. Kindly refer to the table below for the IMM annual subscription fees.

If you have moved residence or employment or changed your contact numbers / email address, we would appreciate if you can take some time to update your records.

As for student members, please notify us if you have graduated in order for us to update your membership status.

Thank you and on behalf of IMM,

Dr. Zulkarnain Kedah (secretariat@iomm.org.my)
Honorary Treasurer
(This is an electronically generated document. No signature is required)

30th September 2019

IMM MEMBERSHIP FEES

Description	Amount (RM)						
	Fellow (F.I.M.M.)	**Professional** (M.I.M.M.)	**Associate** (A.M.I.M.M.)	**Company**	**Ordinary**	**Student**	**Ordinary/ Company for affiliates**
Entrance Fee	-	-	-	50.00	20.00	10.00	40.00 / 50.00
Processing Fee	300.00	150.00	150.00	-	-	-	-
Transfer Fee	10.00	10.00	10.00	-	-	-	-
Annual Subscription	150.00	100.00	80.00	200.00	40.00	10.00	Nil

UPDATE OF MEMBER'S PARTICULARS

Title : Prof / Dato' / Dr / Mr. / other,					
Name	:				
Membership No.	:				
Correspondence Address	:				
Office No.	:		**Mobile phone No.**	:	
Email Address	:				

UPDATE ON STUDENTS MEMBERSHIP

Kindly tick the appropriate box below (& insert year):

☐ Graduated & year: _____

☐ Still Studying & anticipated graduation year: _____

PAYMENT MODE

1) Payment can be made by cheque, telegraphic transfer & bank draft as follows:

Account Name : Institute of Materials, Malaysia
Account No : 8009055156
Swift Code : CIMBMYKL
Bank Name : CIMB BANK
Country: Malaysia

Cheque can be sent to **Suite 515, Level 5, Block A, Kelana Center Point (Lobby B), No.3, Jalan SS 7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor** via post/mail or direct bank-in to the account mentioned above.

2) Payment can also be made by IBG, GIRO or Cash Deposit Machine (CDM) as follows:

Account Name : Institute of Materials, Malaysia
Account No : 8009055156
Bank Name : CIMB BANK

Please email your bank in slip as your payment proof to secretariat@iomm.org.my

Please contact the IMM Secretariat office (secretariat@iomm.org.my) if you do not receive the notification of your renewal (in electronic form via email) WITHIN 2 weeks of your submission of this form & payment.

IMM COUNCIL MEMBERS

2018 - 2020

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President	Ts. Mohd Azmi Mohd Noor - Kebabangan Petroleum Operating Company Sdn Bhd
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2016 - 2018

Advisor	Datuk Ir. (Dr.) Abdul Rahim Hj. Hashim - Universiti Teknologi PETRONAS
President	Mohd. Azmi Mohd. Noor - Kebabangan Petroleum Operating Company Sdn Bhd
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2014 - 2016

Advisor	Datuk Ir. (Dr.) Abdul Rahim Hj. Hashim - Universiti Teknologi PETRONAS
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2012 - 2014

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IMM COUNCIL MEMBERS

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President	Dato' Dr. Ong Eng Long - Kossan Rubber Industries Bhd
Deputy President	Prof. Dr. Mohamad Kamal Harun - Universitit Teknologi MARA
Honorary Secretary	Ir. Max Ong Chong Hup - Norimax Sdn Bhd
Honorary Treasurer	Ir. Mohd. Suradi Yasin - Materials Technology Education Sdn Bhd
Immediate Past President	Zainuddin Ishak - Ingress Fabricators Sdn Bhd
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2008 - 2010

Advisor	Datuk Ir. Yeow Kian Chai - PETRONAS
President	Dato' Dr. Ong Eng Long - Kossan Rubber Bhd
Deputy President	Prof. Dr. Mohamad Kamal Harun - Universiti Teknologi MARA
Honorary Secretary	Ir. Max Ong Chong Hup - GLP-Norimax Sdn Bhd
Honorary Treasurer	Ir. Mohd. Suradi Yasin - Materials Technology Education Sdn Bhd
Immediate Past President	Zainuddin Ishak - Ingress Fabricators Sdn Bhd
Council Members	Tan Sri Kok Onn - Gadang Holdings Bhd Dato' Eric Wong - Timer Group Prof. Dr. Che Husna Azhari - Universiti Kebangsaan Malaysia Prof. Dr. Esah Hamzah - Universiti Teknologi Malaysia Prof. Dr. Hanafi Ismail - Universiti Sains Malaysia Assoc. Prof. Dr. Teh Ser Kok - Freelance Consultant Dr. Abdul Aziz Mohd - Agensi Nuklear Malaysia Dr. Azmi Idris - SIRIM Bhd Dr. Edwin Jong Nyon Tchan - Shell Deepwater Group, KL Dr. Engr. Chong Chien Fatt - Ancom Bhd Ir. Lee Swee Eng - KNM Group Bhd Abd. Rahim Noh - UEM Builders Bhd Chris Chiam Teck Seng - Muhibbah Steel Industries Eng Kim Leng - TTDI Development Sdn Bhd Frankie Chua Cheng Huat - PLC Laboratory Sdn Bhd Johar Juhari - PETRONAS GTS Kang Kim Ang - Corrtrol Corrosion Specialists Sdn Bhd Maimunah Ismail - Shell Deepwater Group, KL Mohd Noor Hussen - PETRONAS Carigali Sdn Bhd Ng Yin Loong - Mudajaya Corporation Bhd Ong Hock Guan - Sarawak Shell Bhd, Miri Siti Haslina Ramli - PETRONAS Research & Scientific Services Tan Ai Tong - Bertam Alliance Bhd Yii Ming Seng - Malaysia LNG Sdn Bhd

2006 – 2008

Advisor	Dato' Dr. Mohd Ariffin Aton
President	Zainuddin Ishak
Deputy President	Dato' Dr. Ong Eng Long
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Immediate Past President	Dr. A. Rahim Mohd. Nor
Council Members	Prof. Dr. Che Husna Azhari Prof. Dr. Esah Hamzah Assoc. Prof. Dr. Mohamad Kamal Harun Assoc. Prof. Dr. Saifollah Abdullah Dr. Abdul Aziz Mohamed Dr. Edwin Jong Nyon Tchan Dr. Leong Kok Hong

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2004 – 2006

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President	Zainuddin Ishak
Deputy President	Dato' Dr. Ong Eng Long
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Immediate Past President	Dr. A. Rahim Mohd. Nor
Council Members	Assoc. Prof. Dr. Ahmad Fauzi Assoc. Prof. Dr. Mohamad Kamal Harun Dr. Abdul Aziz Mohamed Dr. Edwin Jong Nyon Tchan Dr. Leong Kok Hong Dr. Samsudin Bani Chong Chien Fatt Harry Woon Tar Woi Johar Juhari Kamarudin Malek Nor Hisham Abdul Hamid

2002 – 2004

Advisor	Dato' Dr. Mohd Ariffin Aton
President	Dr. A. Rahim Mohd. Nor
Deputy President	Zainuddin Ishak
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Immediate Past President	Dr. Samad Solbai
Council Members	Dato' Dr. Ong Eng Long Prof. Dr. Che Husna Azhari Prof. Dr. Radzali Othman Assoc. Prof. Dr. Ahmad Fauzi Md. Noor Assoc. Prof. Dr. Esah Hamzah Assoc. Prof. Dr. Mohamad Kamal Harun Dr. Edwin Jong Nyon Tchan Dr. Teh Ser Kok Ir. Mohd Raziff Embi Chong Chien Fatt Haji Ghalib Tham Harry Woon Tar Woi Johar Juhari Kang Kim Ang Maimunah Ismail

2000 – 2002

Advisor	Dato' Dr. Hj. Mohd Mansor Salleh
President	Dr. A. Rahim Mohd. Nor
Deputy President	Zainuddin Ishak
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Immediate Past President	Dr. Samad Solbai
Council Members	Dato' Dr. Ong Eng Long Prof. Dr. Che Husna Azhari Assoc. Prof. Dr. Esah Hamzah Assoc. Prof. Dr. Mohamad Kamal Harun Dr. Lim Ching Liang Dr. Samad Solbai Dr. Teh Ser Kok Ir. Mohd Raziff Embi Ir. Tee Yin Tiong Chong Chien Fatt Hamizan Mohd Derus Harry Woon Tar Woi Kang Kim Ang Maimunah Ismail

1998 – 2000

Advisor	Dato' Dr. Hj. Mohd Mansor Salleh
President	Dr. Samad Solbai
Deputy President	Dr. A. Rahim Mohd. Nor
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Council Members	Dato' Dr. Ong Eng Long Prof. Dr. Che Husna Azhari Prof. Dr. Radhakrishna Assoc. Prof. Dr. Esah Hamzah Dr. Lim Ching Liang Dr. Teh Ser Kok Ir. Mohd Raziff Embi Bob Phang David Lim Chee Cheong Kang Kim Ang Maimunah Ismail Mohd Adaham Adullah Wan Zaharah Wan Mohamad Zainuddin Ishak

1996 – 1998

Advisor	Dato' Dr. Hj. Mohd Mansor Salleh
President	Dr. Samad Solbai
Deputy President	Dr. A. Rahim Mohd. Nor
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Ir. Mohd. Suradi Yasin
Council Members	Prof. Dr. Che Husna Azhari Assoc. Prof. Dr. Esah Hamzah Dr. Muhamad Deraman Dr. Teh Ser Kok Ir. Mohd Raziff Embi Ir. Rahim Noh Johar Juhari Kang Kim Ang Maimunah Ismail Ramli Omar Wan Zaharah Wan Mohamad

1987 PROTEM COMMITTEE

Chairman	Dato' Dr. Hj. Mohd Mansor Salleh
Deputy Chairman	Dr. Teh Ser Kok
Honorary Secretary	Ir. Max Ong Chong Hup
Honorary Treasurer	Helmi Hashim
Council Members	Dr. Lim Ching Liang Dr. Samad Solbai Ir. Mohd. Suradi Yasin Abdullah Hassan Andrew Wong Hee Sing Bert Heikoop Brian Shone David Lim Chee Cheong Jamaliah Idris Peter Kok Lok San Wan Zaharah Wan Mohamad

LIST OF HONOURS

IMM ADVISORS

2013 - 2018

Datuk Ir. (Dr.) Abdul Rahim Hashim

2007- 2012

Datuk Ir. Yeow Kian Chai

2002 - 2006

Dato' Dr. Mohd Ariffin Aton

1996 - 2001

Prof. Dato' Dr. Hj Mohd Mansor Salleh

HONORARY FELLOWS

2018

Datuk Ir. (Dr.) Abdul Rahim Hashim

2013

Datuk Anuar Taib

2008

Dr. A. Rahim Md. Nor

2002

Roy Vogelpoel

2017

Dato' Dr. Ir. Haji Mohd Abdul Karim Abdullah

2012

En. Zainuddin Ishak

2007

Datuk Ir. Yeow Kian Chai

2000

Prof. Dato' Dr. Hj Mohd Mansor Salleh

2016

Dato' Dr. Ong Eng Long

2010

YAB. PEHIN Sri Haji Abdul Taib Mahmud

2004

Dr. Ir. Samad Solbai

1992

Brian Shone

IMM PAST PRESIDENTS

2012 - 2016

Prof. Ts. Dr. Mohamad Kamal Harun

2008 - 2012

Dato' Dr. Ong Eng Long

2004 - 2008

Mr. Zainuddin Ishak

2000 - 2004

Dr. A. Rahim Md. Nor

1996 - 2000

Dr. Ir. Samad Solbai

1988 - 1996

Prof. Dato' Dr. Hj Mohd Mansor Salleh

INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th December 2019

Institute of Materials, Malaysia (IMM) is a non-profit professional society that promotes honourable practice, professional ethics and encourages education in materials science, technology and engineering. Engineers, academicians, technicians, skilled workers and professionals are amongst its members exceeding 6800.

Registered with the Registrar of Societies on 6th November 1987, the Malaysian Materials Science & Technology Society (MMS) changed its name to the Institute of Materials, Malaysia (IMM) on 16th June 1997. The objectives of IMM include the training and development of individuals and companies in Malaysia to attain professional recognition in various fields of materials science, technology and engineering.

IMM is administered by a council of 30 members, with volunteers leading more than 15 materials committees, and more than 4 regional chapters, and supported by a secretariat with full time staff.

IMM Vision
To be internationally recognised leading institution in Materials Science and Technology.

IMM Mission
(1) To be the technical authority on material science and technology
(2) To develop an enhance competency and skills for all categories and practitioner
(3) To become an internationally recognized certifying body
(4) To be the forum for industry and academia collaboration
(5) To positively contribute to society and quality of life

The IMM membership is categorised into 6 different grades and open to anyone above the age of 17 years - individuals and companies keen in developing and contributing towards the growth of materials science, technology and engineering in Malaysia.

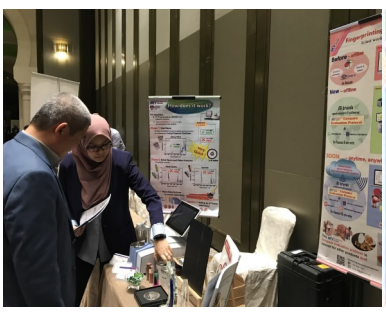
Over the years, IMM have conducted courses on coatings, coatings fingerprinting, corrosion, welding, vibration etc in support of the oil and gas industry in Malaysia. Over 600 Coatings Inspectors have been trained and certified as well as 2500 Blasters & Painters, Supervisors, Corrosion Technician and Vibration Practitioners. Its certification programmes are recognized by PETRONAS and all oil & gas operators. Since January 2011, 72 Associate Welding Engineers, 80 Welding Engineers, 20 Senior Welding Engineers and 24 Coating Fingerprint Quality Controllers were trained and certified.

IMM has also organised 10 International Materials Technology conferences (IMTCE) on a biennial basis, and numerous technical seminars, educational programmes, technical visits, and materials awareness programmes since 1988.

Public courses, such as Microbiologically Influenced Corrosion (MIC) and Welding Technology for Non-Welding Personnel, are being offered occasionally. Training on materials awareness has also been conducted in public listed companies.

The courses and programmes are being organised by Authorized Training Body/Bodies and Authorized Event Organizer/Organizers.

Collaborations with the Asian Welding Federation, The Society for Protective Coatings, US (SSPC), Sabah Skills Technology Centre (SSTC), and local universities continue to be part of IMM's vision and long term mission to educate, train and serve the materials fraternity.



GENERAL INFORMATION ON MEMBERSHIP

The IMM Membership is open to all individuals and companies in developing the contribution of Materials science, technology and engineering towards industrial growth in Malaysia. The technology of materials is advancing day-to-day throughout the world. Membership to the IMM will enable networking and exchange of knowledge from a very wide variety of specialised areas of expertise. Please feel free to download or print a copy of the application form together with the IMM regulations. If you have any doubt, please do not hesitate to contact our secretariat through the phone; +603-4256-2286 or email to secretariat@iomm.org.my

Annual subscriptions shall be payable in advance on 1st January of each year. Those admitted into the IMM between 1st July and 31st December in any year shall pay only half the annual subscription. Seniors (above 55 years old) get 50% discount off their annual subscriptions.

We have an online application for membership for selected grades. Membership application forms in document format can be accessed from www.iomm.org.my.

Kindly fill the form and email to secretariat@iomm.org.my or fax it to: +603-7880 1753 or send it to :

IMM SECRETARIAT

Suite 515, Level 5, Block A, Kelana Centre Point (Lobby B),
No. 3 Jalan SS 7/19, Kelana Jaya,
47301 Petaling Jaya, Selangor

IMM MEMBERSHIP BENEFITS

(1) IMM activities offer members to interact and network with representative from the industry, academia and government related to the Materials profession.

(2) Members will gain knowledge on career opportunities for their children, friends etc as IMM offers certification courses in skilled trades e.g. Welding, Painting, Inspection, Corrosion etc.

(3) IMM-JWES Welding Engineer Certification program leading to a Welding Engineer Certification which offers great employment opportunities in the oil & gas, heavy industry, marine and energy sectors.

(4) IMM publications – quarterly magazine plus annual conferences offer presenters an opportunity for their technical research or industry-academia papers to be published in ISI- and Scopus-index journals.

(5) IMM organizes many free technical events for members to acquire new knowledge and networking opportunities. Participants to these events will also receive Certificate of Attendance for their Continuing Professional Development records.

IMM MEMBERSHIP FEES SCHEDULE AS PER BELOW:

Description	Amount			
	Entrance Fee	Processing Fee	Transfer Fee	Annual Subscription
Fellow (F.I.M.M)	-	RM 300.00	RM 10.00	RM 150.00
Professional (M.I.M.M)	-	RM 150.00	RM 10.00	RM 100.00
Associate (A.M.I.M.M)	-	RM 150.00	RM 10.00	RM 80.00
Company	RM 50.00	-	-	RM 200.00
Ordinary	RM 20.00	-	-	RM 40.00
Student	RM 10.00	-	-	RM 10.00
Ordinary/ Company for affiliates	RM 40.00/ RM 50.00	-	-	NIL

INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th December 2019

REGULATIONS GOVERNING ADMISSION AND TRANSFER OF MEMBER GRADES

The Council shall establish a Membership Committee which will be responsible for review of applications for transfer of membership grades. The Memberships Committee shall recommend transfers for Council approval at Council Meetings. All grades of memberships are awarded at the discretion of the Council and may be withheld or withdrawn in the event of conduct likely to prejudice the standing of the Institute. Every member shall receive a membership certificate.

The Memberships Committee shall be responsible for drafting the "Regulations Governing Admission and Transfer of Member Grades" for Council approval. These regulations may be changed from time to time subject to Council approval.

Every application for membership shall be proposed and seconded according to these regulations and shall be forwarded to the Honorary Secretary who shall, at the first convenient opportunity, submit it to the Council for approval the Council may at its discretion reject any application without assigning any reason thereof.

Each company on admission shall be entitled to nominate one representative to exercise all rights of membership. Only representatives of Company membership, Fellows (F.I.M.M.). Professional Members (M.I.M.M.) and Ordinary members shall have the right to vote and to hold office in IMM.

Only Malaysian Citizens, and Blue Identity Card Holders can become Ordinary Members, Associate Members (A.M.I.M.M.), Professional Members (M.I.M.M.) and Fellow Members (F.I.M.M.) with voting rights. Foreigners can join similar grades but shall have no voting rights.

MEMBERSHIP GRADE & REQUIREMENT

Honorary Fellow (Hon. F.I.M.M.)
The Council shall have the power to elect Honorary Fellows who shall be persons of eminence in science or industry. The election shall be based on a majority vote within the Council. Honorary fellows shall enjoy such privileges as may from time to time be determined by the Council.

Fellow (F.I.M.M.)
A person at least 35 years of age with approved academic qualifications, training and 8 years relevant responsible experience who has made significant contributions to the science and practice of profession of Materials Science and Engineering or has given distinguished service to industry or education.

Professional Member (M.I.M.M.)
A person at least 25 years of age, with approved academic qualifications and training, having at least 3 years responsible experience in Materials Science and Engineering, or a person at least 40 years of age, with at least 15 years of experience with practical responsibility, as demonstrated by thesis/dissertation or report and interview.

Associate Member (A.M.I.M.M.)
A person at least 25 years of age, who possesses an interest in Materials Science and Engineering but have not acquired the necessary experience or obtained the qualification, governing entry to Member grade. An Associate Member, on obtaining the necessary qualifications, may apply for transfer to Member grade.

Company Member
Any company that is involved or has interest in Materials Science and Engineering will be qualified to join as a company member.

Ordinary Member
Any Malaysian Citizen and above the age of 18 years engaged in activities related to research, development and applications in Materials Science and Engineering shall qualify for Ordinary Membership. Only Ordinary Members who meet the necessary minimum requirements may apply for transfer to membership grades of Fellow, Member and Associate Member and may use the abbreviated titles upon transfer.

Student Member
A student member shall be a person not under 17 years of age who at the time of application satisfies the Council that he has received a good general education and is studying subjects related to Materials Science or Engineering. A student member shall transfer to the grade of Ordinary Member after graduation provided he or she is suitably qualified and as soon as he or she is earning a full-time salary. A Student shall not become member of the IMM without the prior approval of the Vice-Chancellor or Head of Department of the university or relevant authority concerned.

Coating Fingerprinting Forum

IAVAC 2019

KLSF 2019

MLC 2019

FREE Ordinary Membership for Affiliates:

The Institute of Materials, Malaysia will recognize various professional institutions and societies for **free membership** at "Ordinary Grade". Members of the recognized professional institutions and societies can become Ordinary Members of the IMM without any annual subscriptions. The Council of the IMM approved the proposal in accordance to IMM constitution clause no. 6.1.3 and the members at its 21st Annual General Meeting unanimously approved the proposal on 19th March 2011.

Members of following institutions and societies are welcome to apply.

(1) American Welding Society
(2) Asian Welding Federation
(3) Board of Architects Malaysia
(4) Board of Engineers, Malaysia
(5) Engineering Institutes under the Engineering Council of UK
(6) Geological Society of Malaysia
(7) Institut Kimia Malaysia
(8) Institute of Corrosion UK
(9) Institute of Materials Singapore
(10) Institute of Physics Malaysia
(11) Institution of Engineers, Malaysia
(12) Jabatan Minerals & Geoscience
(13) Malaysian Medical Association
(14) Malaysian Nurses Association
(15) Malaysian Society for Non-Destructive Testing
(16) Malaysian Welding & Joining Society
(17) National Association of Corrosion Engineers USA
(18) Persatuan Arkitek Malaysia
(19) Plastics & Rubber Institute of Malaysia
(20) Singapore Welding Society
(21) Society of Petroleum Engineers
(22) Steel Structures Painting Council USA
(23) The Welding Institute UK

FREE Company Membership for Affiliates:

The Institute of Materials, Malaysia will recognize various professional institutions and societies for free membership at "Company Grade". Company Members of the recognized professional institutions, societies & associations can become Company Members of the IMM without any annual subscriptions. The Council of the IMM approved the proposal in accordance to IMM constitution clause no. 6.1.3 at its Penultimate Council Meeting on 10th January 2014 which was endorsed at the 24th Annual General Meeting held on 21st March 2014.

List of Free Company Memberships for Trade Associations:-

(1) Federation of Malaysian Manufacturers (FMM)
(2) Malaysian Offshore Contractors Association (MOCA)
(3) Malaysian Oil & Gas Engineering Council (MOGEC)
(4) Malaysian Oil & Gas Services Council (MOGSC)

Email : secretariat@iomm.org.my Website : www.iomm.org.my

IMM ACTIVITIES 2019

IMM International Applied Vibration Conference 2019: "Vibration Technology in the Era of Industrial Revolution 4.0"
13th-14th November 2019, Sheraton Imperial, Kuala Lumpur

Technical Oration on Digital Radiography
14th November 2018, SK3 Lecture Theatre, Faculty of Engineering & Science, Curtin University, Miri, Malaysia

Young Person's World Lecture Competition 2019
10th October 2019, London, United Kingdom

Strategic Collaboration between Politeknik Kota Kinabalu (PKK) and Institute of Materials, Malaysia
23rd February 2019, Bilik Tetamu PKK, Kota Kinabalu, Sabah

MOGEC Golf Championship 2019
2nd March 2019, Mines Resort Golf Club

29th Annual General Meeting
22nd March 2019, Kelab Golf Negara Subang (KGNS)

Appreciation Dinner with Datuk Ir. Dr. Abdul Rahim Hashim
25th January 2019, Concorde Hotel, Shah Alam

IMM-UiTM Student Chapter Academic Visit to Kualiti Alam - Cenviro
6th March 2019, Kualiti Alam - Cenviro, Negeri Sembilan

Workshop Accreditation Manual for Technology and Technical Programme Malaysia Board of Technologist Series - 2
25th January 2019, Corus Hotel, Kuala Lumpur

Asia Weld Tech 2019 and Asian Welding Federation Council Meeting
24th April 2019, German-Malaysian Institute, Bangi

Forum on "Using Technology to Address Global Plastic and Environmental Issue"
22nd March 2019, Kelab Golf Negara Subang

Forum on "Towards Polymeric Coating Fingerprinting" V: Big Wave
4th April 2019, Dewan Presiden, Kelab Golf Negara Subang (KGNS), Selangor, Malaysia

Materials Lecture Competition 2019
3th April 2019, Centre of Graduate Studies, UTeM main campus, Durian Tunggal, Melaka

Participation of IMM Malaysia in the Sarawak Oil & Gas Seminar and Exhibition (SOGSE) 2019
13th-14th April 2019, Imperial Mall Hotel, Miri, Sarawak

Making Inroads into the Land Transport Industry: Memorandum of Understanding between IMM and Prasarana Malaysia Bhd
19th April 2019, Alila Bangsar, Kuala Lumpur

Memorandum of Understanding between Institute of Materials, Malaysia and Universiti Tun Hussein Onn Malaysia to Establish UTHM-IMM Materials Student Chapter
29th August 2019, Mudzaffar Hotel, Malacca

IMM Corrosion Committee Half-Day Seminar and Site Visit to Prasarana Centre of Excellence and Rapid Rail Depot
27th June 2019, Prasarana Centre of Excellence (PACE), Kompleks Rapid Rail Subang, Petaling Jaya, Selangor

IMM ACTIVITIES 2018

Half-Day Seminar "Corrosion Controls and Prevention" and Site Visit to Navy Base, Lumut
14th May 2018, Cawangan Penguasa Kejuruteraan Armada Pangkalan Tentera Laut Diraja Malaysia, Lumut

Strategic Collaboration between Polytechnic of Sultan Azlan Shah, Ministry of Higher Education and Institute of Materials, Malaysia
16th August 2018, Dewan Mualim, Behrang

Corrosion Forum: Corrosion and Coatings Development in Industry
5th July 2018, Universiti Teknologi MARA Shah Alam

Materials Lecture Competition 2018
3rd May 2018, Universiti Teknologi Malaysia, Kuala Lumpur Campus

First IMM International Applied Vibration Conference (IAVIC)
21st – 22nd November 2018, Parkroyal, Bukit Bintang, Kuala Lumpur

Young Person's World Lecture Competition 2018
11th October 2018, Fairview Course Arena, Port Elizabeth, South Africa

Inaugural Symposium on Railway Infrastructure and Engineering
24th January 2018, Universiti Tunku Abdul Rahman Sungai Long Campus

4th Malaysian Oil and Gas Services Exhibition and Conference (MOGSEC 2018)
25th - 27th September 2018, Kuala Lumpur Convention Centre

IMM ACTIVITIES 2017

1-Day Coating Conference
18th May 2017, Corus Hotel, Kuala Lumpur

1-Day Conference on Pipeline Corrosion Management
27th September 2017, Corus Hotel, Kuala Lumpur

Memorandum of Understanding Signing Ceremony Between IMM and South West JiaTong University
16th November 2017, Corus Hotel, Kuala Lumpur

30th Anniversary IMM Dinner Photo Gallery
6th November 2017, Intercontinental Hotel, Kuala Lumpur

1-Day Conference on Insulation
16th March 2017, Universiti Teknologi Malaysia Space, Kuala Lumpur

IMM Vibration Conference
16th November 2017, Corus Hotel, Kuala Lumpur

IMM & Society for Protective Coatings Cooperation Agreement Signing Ceremony
17th March 2017, PETRONAS Twin Tower, Kuala Lumpur

IMM Friendly Futsal Game 2017
25th February 2017, Kompleks Rakan Muda Puchong (IM4U Central)

1-Day Conference on Prevention of Loss of Primary Containment
1st November 2017, Bintulu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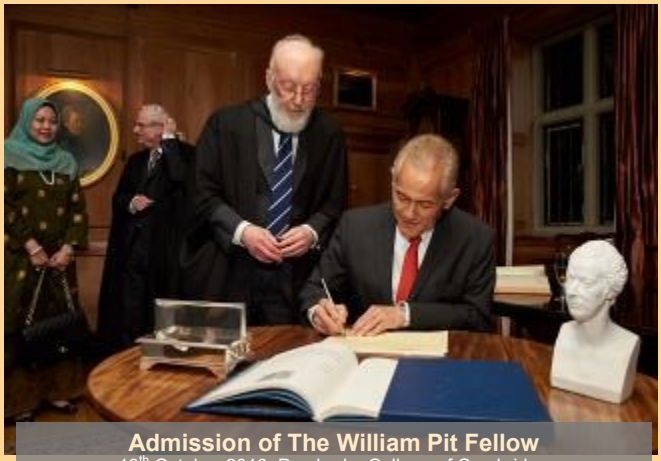
IMM ACTIVITIES 2016

Vibration Awareness Seminar
17th November 2016, Promenade Hotel, Kota Kinabalu

1-Day Conference Under Insulation
13th October 2016, Corus Hotel, Kuala Lumpur

Academy of Sciences Malaysia Conferment 2016
13th December 2016, Kuala Lumpur Convention Center



Admission of The William Pit Fellow
13th October 2016, Pembroke College of Cambridge

Coatings & Corrosion, Fabrication & Welding 2016
17th - 19th May 2016, Putra World Trade Centre

Young Person's World Lecture Competition 2016
8th-15th October 2016, Rio De Janeiro, Brazil

10th International Materials Technology Conference & Exhibition 2016
16th - 19th May 2016, Putraworld Trade Centre

IMM ACTIVITIES 2015

Forum on "Towards Fingerprinting of Polymeric Coatings" IV
29th October 2015, Kelab Golf Negara Subang

Young Person's World Lecture Competition 2015
22nd October 2015, Grogheda, Ireland

Kuala Lumpur Engineering & Science Fair 2015
30th October 2015 - 1st November 2015, The Mines International Exhibition and Convention Centre

The-first-of-its-kind IMM Coating Fingerprint Foundation Course in the world
10th September 2015, Holiday Inn Glenmarie

5th Regional Materials Technology Conference
8th May 2015, Miri

Materials Lecture Competition 2015
14th May 2015, Bangi-Putrajaya Hotel

IMM ACTIVITIES 2014-2013

2nd International Materials Symposium cum 4th Regional Materials Technology Conference & Exhibition
12th September 2013, Eastwood Valley Golf & Country Club, Sarawak

9th International Materials Technology Conference & Exhibition 2014
13th - 16th May 2014, Putra World Trade Center

Materials Lecture Competition 2013
30th May 2013, Seri Pacific Hotel, Kuala Lumpur

Seminar on Materials & Asset Integrity
21st March 2014, Kelab Golf Negara Subang

Young Person's World Lecture Competition 2014
23th October 2014, California, USA

Forum on Specialty Polymers for High Temperature & High Pressure Application in the Oil & Gas Industry
14th June 2013, PETRONAS Twin Towers, Kuala Lumpur

Forum on Towards Fingerprinting of Polymeric Coatings I
22nd March 2013, Kelab Golf Negara Subang (KGNS)

Forum on Towards Fingerprinting of Polymeric Coatings II
11th October 2013, Tanjung Puteri Golf Resort

Forum on "Towards Fingerprinting of Polymeric Coatings" III
20th June 2014, Glenmarie Golf and Country Club

IMM ACTIVITIES 2012-2009

Pipeline Intergrity Seminar & Networking Cocktail
20th September 2012, Kuala Lumpur

Evening Talk on the "Good & Bad Practise in Fabrication and Use of Stainless Steel"
6th December 2012, Kuala Lumpur

7th INTERNATIONAL MATERIALS TECHNOLOGY CONFERENCE & EXHIBITION 2010
14th - 16th June 2011, Hilton Hotel, Kuching

8th International Materials Technology Conference & Ex-hibition 2012
9th - 12th July 2012, Sunway Resort & Spa, Selangor

"Advanced Coatings Standard & Technology" Symposium Jointly Organised by IMM-SSPC MoU Signing Ceremony
15th November 2011, Glenmarie Golf & Country Club

3rd Regional Materials Technology Conference
26th April 2011, Miri

IMM Expands Into Sabah and Sarawak (2009)
From Left: John Wong Pak Kung (Chairman IMM Labuan Chapter), Andrew Ronggie (Advisor IMM Kuching Chapter), Nurul Adzwan Sulaiman (Chairman IMM Kuching Chapter)

IMM ACTIVITIES 2008-80'

6th International Materials Technology Conference & Exhibition 2008
14th - 16th June 2008, Hilton Hotel, Kuching

Plenary Session, Charity Golf, Technical Factory Visit in Conjunction with IMM 10th Annuak Grand Meeting
17th October 2001, MSE Training Centre, Pasir Gudang

Seminar on"New Coating Technology"
26th March 2008, Holiday Inn Glenmarie Hotel, Kuala Lumpur

5th International Materials Technology Conference & Exhibition 2006
17th - 20th July 2006, Crowne Plaza Mutiara Hotel, Kuala Lumpur

3rd International Materials Engineering & Technology Conference & Exhibition "Engineering Materials in the Millenium"
23rd - 24th May 2002, Holiday Inn, Miri

4th International Materials Technology Conference & Exhibition 2004 (IMTCE2004) & MoU Signing Ceremony between IMM-Intermerger SDN BHD on the Formation of Materials Technology Education Sdn Bhd
23rd - 25th March 2004, Hotel Istana, Kuala Lumpur

2nd International Materials Engineering & Technology Conference & Exhibition 1999
25th March 1999, Sheration Hotel Subang

1st International Materials Technology Conference & Exhibition
1st - 3rd March 1990, Putra World Trade Centre

2nd International Materials Engineering & Technology Conference & Exhibition 1999
25th March 1999, Sheration Hotel Subang

DID YOU KNOW

Malaysian Materials Science & Technology Society (MMS) changed its name to the **Institute of Materials, Malaysia** (IMM) on 16 June 1997 by the new President, Ir. Dr. Samad Solbai, Ir. Max Ong Chong Hup (Honorary Secretary) and Ir. Mohd Suradi Yasin (Honorary Treasurer).

Founders of **Malaysian Materials Science & Technology Society** (MMS)
6th November 1987, Subang Jaya


Prof. Dato' Dr. Hj Mohd Mansor Salleh


Ir. Max Ong Chong Hup

START

Cover Story

FINGERPRINTING OF POLYMERIC COATINGS

Prepared by
Suhaila Idayu Abdul Halim, Hairunnisa Ramli & Melissa Chan Chin Han
Universiti Teknologi MARA, Task Force on Coating Fingerprinting Committee Members (Phase 3)

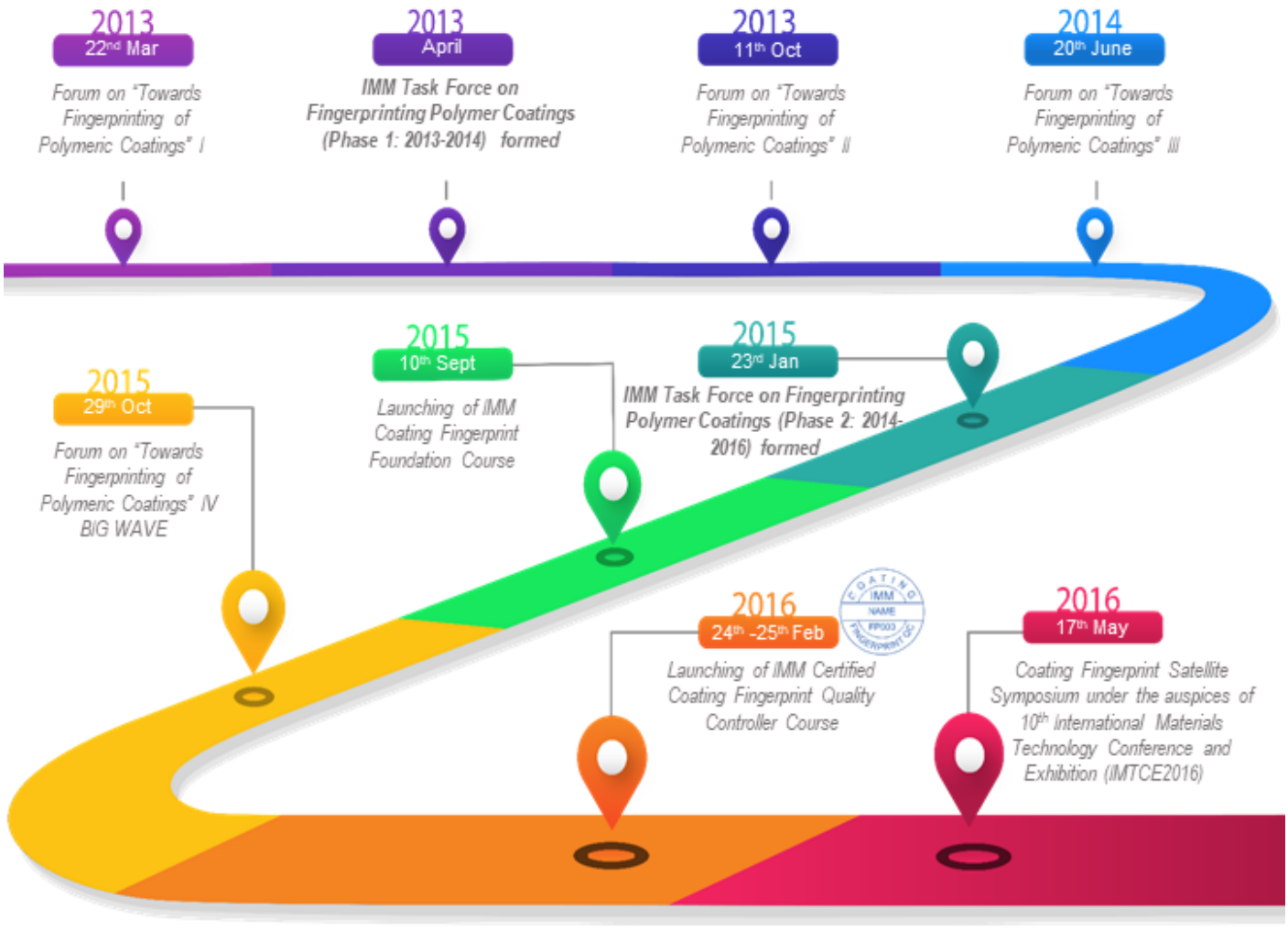
Background

The oil & gas industry has been suffering with corrosion on their newly painted steel structures regardless of having the MILL CERTIFICATE for steel structures as part of compliance requirements. Often, the paint fails prematurely by means within 6 to 18 months of application that in time lead to corrosion on the steel structures. Thus, IMM developed the **IMM Coating Inspector Certification and IMM Blaster and Painter Certification** program in 1990 to enhance the quality of local coating inspectors and blaster & painters, respectively. Nevertheless, the problems still arise and continue worsening. Now, the oil & gas industry realized that the attributing factors of premature coatings failures not only limited to painting work inspection, surface preparation, paint application *etc* but could be from the faulty paints.

Over the years, it has been in practice that paint manufacturers in Malaysia only provide quality assurance/quality control (QA/QC) documents such as certificates of analyses related to physical tests, and sometimes material safety data sheet (MSDS) without third-party verification for batch-to-batch paint supplied to the job sites. The users have no other means to verify the batch-to-batch paint's consistency on-site. Previously, there was a perspective in the industry that certification of polymeric coatings was not possible because the expertise on spectroscopic analyses and interpretation of results for such purpose were not available. Hence, the establishment of **Coating Fingerprint Certificate** for polymeric coatings supplied to the oil & gas companies did not materialize for many years.

Objectives

In 2013, IMM initiated an industry-academia collaboration between the academic Council Members of IMM from various Malaysian universities with various industry sectors such as oil & gas companies, paint manufacturers, Fourier-Transform Infrared (FTIR) instrument vendors and Coating Consultants by forming a Task Force on Coating Fingerprinting to tackle an industrial challenge on fingerprinting of polymeric coatings. The main goal of this Task Force is to enhance the overall QA & QC of the polymeric coatings, with the aim of ensuring the polymeric coatings supply conform to users' specifications.



HIGHLIGHTS

Current Progress

IMM Task Force on Coating Fingerprinting (**Phase 3: 2018-2020**) has been formed in September 2018 and one mock execution on coating fingerprinting has been conducted in the early of 2019. It comprised the study of FTIR analyses and performance tests of more off-shore coating products *e.g.* inorganic zinc coating, epoxy-zinc coating, high solids epoxy coating, polyurethane coating, glass flake polyester coating and silicone-aluminum coating. The analyses with reference to **IMM FP01:2019** have been carried out using bench-top, mobile and handheld FTIR spectrophotometers. Recently, UiTM research team (on behalf of Task Force on Coating Fingerprinting) that leads by Prof. Ts. ChM. Dr. Melissa Chan Chin Han and Prof. Ts. Dr. Mohamad Kamal Harun participated in a few national-level innovation competitions and international exhibitions with the intention of highlighting and promoting the implementation plan of the Coating Fingerprinting. The team has won several prizes in the competitions and the team wishes to share the achievements and the prizes with all committee members of IMM Task Force on Coating Fingerprinting of Phase 1, Phase 2 and Phase 3.

www.iomm.org.my
[Coating Fingerprinting]

13th - 14th November 2019
Exhibition at International Applied Vibration Conference 2019 (IAViC 2019), Sheraton KL

17th October 2019
Exhibition at Disruptive Technologies in Materials Corrosion and Inspection, Sheraton KL

1st October 2019
Final Pitching Competition of Malaysian Technology Development Corporation, TM Convention Centre, KL
The UiTM team was the 1st runner-up under the Institutes of Higher Learning category

2nd July 2019
Central Region Pitching Competition of Malaysian Technology Development Corporation, TM Convention Centre
The UiTM team was the 2nd runner-up under the Institutes of Higher Learning category

15th May 2019
2nd Site Visit to UCE Engineering Sdn Bhd (Blasting & Painting)

4th April 2019
Forum on "Towards Fingerprinting of Polymeric Coatings V": Big Wave, KGNS

7th-9th November 2018
Launching of IMM Certified Coating Fingerprint Trainer Program, KGNS

24th October 2019
Plant Visit to Jotun, Nilai Factory

10th – 13th October 2019
Selangor Research & Development and Innovation Expo 2019, MITEC KL
The UiTM team won the 3rd place under machinery & equipment cluster for University or College

10th – 15th September 2019
Invention, Innovation and Design Exposition 2019, UiTM Shah Alam
The UiTM team won Silver Medal for elevator pitch and Silver Award in the innovation competition

14th August 2019
IMM FP01:2019 open for public access at IMM website

4th April 2019
Launching of IMM FP01:2019 Standard – Coating Fingerprinting Overall Procedures for Paints Using FTIR and Other Related Methods, KGNS

15th March 2019
1st Site Visit to UCE Engineering Sdn Bhd (Blasting & Painting)

September 2018
IMM Task Force on Fingerprinting Polymer Coatings (Phase 3: 2018-2020) formed

Figure 1: Group photo taken after the completion of 5th Task Force on Coating Fingerprinting meeting on 24th October 2019

ICPAC KOTA KINABALU
International Congress on Pure & Applied Chemistry Kota Kinabalu

27 - 30th June 2020
Pacific Sutera Hotel, Kota Kinabalu, Sabah, Malaysia

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www.icpackk2020.org

Technical Article 1

FTIR Fingerprinting of Raw Materials for Epoxy Paint Manufacturing

SALIM Yoga Sugama[1], **CHAN** Chin Han[1*], Max **ONG** Chong Hup[2], Mohamad Kamal **HARUN**[1]
[1]Universiti Teknologi MARA, Faculty of Applied Sciences, 40450 Shah Alam, Selangor, Malaysia
E-mail: yoga.s.salim@gmail.com ; cchan_25@yahoo.com.sg (*corresponding author) ; mkharun@gmail.com
[2]Norimax Sdn Bhd, 2, Jalan TPP 5/17, Taman Perindustrian Puchong, Seksyen 5, 47160 Puchong, Selangor, Malaysia
E-mail: maxong54@gmail.com

Abstract

Consistency of raw materials for epoxy paint manufacturing was investigated. Selected raw materials comprised of Epikote™ resins and some organic solvents collected from different paint manufacturers are discussed in this study. FTIR spectra of raw materials were compared using a commercial FTIR software utilizing *high sensitivity compare* function. With acceptance criteria of degree of similarity (r) ≥ 0.898, results show that a normal grade Epikote™ yields r value below 0.898 when compared to that of premier grade Epikote™. All studied samples including solvents exhibits homogeneous mix across different sampling locations (**T**op, **M**iddle and **B**ottom) in the sample containers and **T**op location can be used for QA/QC purpose. For a particular premier grade of organic-based raw material where samples were collected from different paint manufacturers, r values are all above 0.898. This suggests the chemical composition of the premier grade of the particular raw materials is at close approximation.

Introduction

Adulterated protective paint has raised concerns in the oil and gas industry due to the increasing cost of corrosion to repair the onshore/offshore steel structures. Other factors such as improper paint specification, incorrect surface preparation, incompetent applicators and time constraints at job site also contribute to premature coating failure. With some blame directed towards incompetent applicators, initiatives to improve the skills of (blasters and painters) technicians, engineers, and supervisors had been initiated worldwide including Malaysia. Although the skills of blasters/painters had been improved significantly through certifications and the supplied paints come along with a 'mill certificate' as part of product conformance, premature coating failure still occurs. As such in 2013, the Institute of Materials, Malaysia (IMM) formed a Task Force to improve the quality control of supplied paint. This leads to the generation of "IMM Coating Fingerprint" certification scheme [1] for quality control of supplied paint. IMM recently released a standard (IMM FP01:2019) [2] detailing the procedures to fingerprint manufacturers' paints by Fourier Transform InfraRed (FTIR) spectroscopy. This document filled the practical gap of existing international standards such as ISO 12944-9:2018 [3], ASTM D2621-87(2016) [4] and ASTM D7588-11(2018) [5] or similar purpose. Insufficient details and workable guidelines, about FTIR evaluation (interpretation of the spectra) of the wet paints from the mixing tank immediately after each batch of the production in the paint factory, inspired the IMM Task Force to draft a step-by-step evaluation protocol about FTIR fingerprinting of paints using FTIR equipped with attenuated total reflectance (ATR) sampling accessory.

The technique of ATR-FTIR using a *high sensitivity compare* function to compare between the sample spectra and Reference spectrum had been successfully applied to two-pack epoxy paints [6]. Acceptance criteria of degree of similarity (r) ≥ 0.900 ± 0.002 [7] had been accepted for the consistency of two-pack epoxy paint for batch-to-batch production by the IMM Task Force on Coating Fingerprinting. Previous studies [6, 8] also conclude that the FTIR spectra from different brands of spectrophotometers can be analyzed using the commercial FTIR softwares utilizing *high sensitivity compare* function. All previous studies reported on the two-pack epoxy paint [8-10] and raw material pigments [6, 11] with no information concerning the FTIR fingerprinting of other raw materials.

The raw materials used in the epoxy paint manufacturing are comprised of primarily binders (epoxy and amine), pigments (TiO_2, ZnO, *etc.*), solvents (isobutanol, xylene, white spirit, *etc.*) and other additives. With price competition in global market, some raw material suppliers claimed that they could provide equivalent or normal grade raw materials with cheaper price as compared to the premier grade of a particular raw material. Questions arise to whether the normal and premier grades with huge price difference can be distinguished *via* FTIR fingerprinting in order to reveal how these 'equivalent' grade raw materials with cheaper price differ from raw materials of higher price through degree of similarity of FTIR spectra. Since the control of raw materials' quality is crucial to formulate high performance protective paint that could last as intend-

Due to limited printed pages, full article can be accessed electronically on IMM website
https://www.iomm.org.my/related-publications-on-coating-fingerprinting/

Scan QR Code

Technical Article 2

Coating Fingerprint Certification: Towards Malaysian and ISO Standards

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Flash Back

Development in **Coating Fingerprint Certificate** initiated by the Institute of Materials, Malaysia (IMM) has traversed progressively since 2013. This initiative is a successful showcase of industry-academia collaboration to solve an industrial challenge on fingerprinting of polymeric coatings. The academic Council Members of IMM from various Malaysia universities were in collaboration with oil companies, paint manufacturers [1-3], Fourier-transform infrared (FTIR) instrument vendors and Coating Consultants (forming Task Force on Coating Fingerprinting) [4-8].

Despite having a MILL CERTIFICATE for steel structures as part of compliance requirements, the oil & gas companies have been still facing corrosion on their newly painted steel structures. In 1990, **IMM Coating Inspector Certification** program was developed in order to upskill the local coating inspectors. In 2000, IMM developed another certification program, *i.e.* **IMM Blaster & Painter Certification**, to upskill blasters & painters. However, premature coating failures continue to get worse and the oil & gas industry realized that the failure could also be caused by the batch-to-batch consistency of the paints supplied on-site. However, during that time, there was widespread perception within the oil and gas industry that certification of polymeric coatings was not possible because the expertise on spectroscopic analyses and interpretation of results for such purpose were not available.

Current Status

Up-to-date, **five public forums** had been organized by the IMM between 2013 and 2019 to create awareness for the practicality of the fingerprinting of polymeric coatings [9-15]. The IMM Task Force on Coating Fingerprinting completed two phases of work; in which Phase 1 (2013-2014) instigated: FTIR spectroscopy is a simple and reliable tool for the study of reproducibility (*i.e.* to fingerprint) of the 2-pack epoxy coatings (resin and hardener). The fingerprinting regions of FTIR for epoxy resin and hardener were identified and the **confidence level of acceptance (degree of similarity)** for quality assurance or quality control (QA/QC) control was proposed at ≥ **0.900** [6, 9, 11, 16]. Phase 2 (2015-2016) involved the appreciation of the root causes of coating failures particularly in Malaysia and the adoption of Coating Fingerprinting initiative by the Malaysian oil & gas operators as one useful QA/QC tool for ensuring coating quality [10]. It also led to the establishment of 1-day IMM Foundation Course on Coating Fingerprinting and 2-day IMM Certification Course for Coating Fingerprint Quality Controller [9, 17-21]. The study suggested that premature coating failure is caused by a number of concurrent factors including:

1) Surface preparation of the substrates (blaster skills & techniques),
2) Application of the coatings (applicator skills and techniques),
3) Environmental factors (weather, temperature, humidity etc during blasting & painting),
4) Quality of paint materials including paints, thinners and additives,
5) Project production schedules and management (rush jobs can lead to failures),
6) Owner specifications and standards for paint systems and applications,
7) Mechanical damage during installation and erection,
8) Impractical design of structures and equipment for good painting, and
9) Blasting & painting contractors' key performance index (KPI) on area of work completion.

Due to limited printed pages, full article can be accessed electronically on IMM website
https://www.iomm.org.my/related-publications-on-coating-fingerprinting/

Scan QR code

Technical Article 3

FTIR Fingerprinting for Polymeric and Organic-based Products from (Un)authorized Retailers

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Abstract

Fourier-transform infrared (FTIR) is a reliable tool for the study of reproducibility of batch-to-batch wet paints for oil & gas industry. Procedures from the Institute of Materials, Malaysia (IMM) Standard (IMM FP01:2019) are referenced and adopted partially to other polymeric and organic-based products such as water bottles and liquid lipsticks. The estimation of degree of similarity (r) between the same brand products from different retailers (*i.e.* authorized retailers from department stores and unauthorized retailers from local markets) is attempted. The price difference of the products from authorized retailers is roughly 17 times higher as compared to the unauthorized retailers. FTIR results show significant difference between the Reference spectra (products from authorized retailers) as compared to the sample spectra (products from unauthorized retailers) with $r << 0.898$. This may imply that the water bottles from authorized and unauthorized retailers (or the liquid lipsticks), which have similar physical appearance in terms of the products as well as the packaging, are not "equivalent" products in term of chemical compositions. Lastly, FTIR is a quick and non-destructive testing tool to fingerprint polymeric and organic-based products for quality assurance/quality control (QA/QC).

Introduction

FTIR spectroscopy, equipped with Attenuated Total Reflectance (ATR) sampling accessory, has been widely used for qualitative and quantitative identification of components in paint and coating material, as it is fast, reliable and requires little or no sample preparation [1–4]. Previous studies show the efficiency and reproducibility of FTIR results to fingerprint wet paints for steel structures for oil & gas industry. The FTIR structural analysis studies on fingerprinting to compare different wet paints or to check the batch-to-batch paint production consistency are demonstrated experimentally [2–5]. Good reproducibility is obtained by using ATR sampling accessory as compared to that of KBr pellet method (*i.e.* transmittance mode) in some cases. For example, Almeida *et.al.* (2002) demonstrated unwanted secondary reactions when KBr is mixed with highly hygroscopic samples [6].

A lot of studies on the proposed fingerprinting paint procedures require basic understanding in chemistry and spectroscopy, therefore highly skilled and trained analysts are needed for results interpretation. One of the examples, Duce *et.al.* (2014) reveals the effect of a new alkyd paint formulation on the artificial ageing process and the stability of the fast drying oil colour alkyd paint on an artwork [7]. Their study focuses on selected regions of FTIR spectra in order to differentiate artificial (for paint replicas) and natural (for real paints) degradation of paintings. Another example, Szafarska *et.al* (2009) proposed a method consists of several stages encompassing several normalization and subtraction processes to extract mathematically the pure paint spectrum from the spectrum of paint coat on different bases, acquired by ATR-FTIR technique for forensic purpose. The similarity of the spectrum obtained with the Reference spectrum was estimated by means of the normalized Manhattan distance [8].

For routine QA/QC, the proposed approaches as in Refs [7,8] are deemed unpractical, costly and time consuming. The FTIR fingerprinting approach used according to IMM FP01 (Coating Fingerprinting Overall Procedures for Paints and Other Related Methods) [9] is inspired by ATR-FTIR fingerprinting of the wet paints in reference to the wet paints approved during tender's qualification, no sample preparation is needed and even an O-level skilled personnel is able to interpret the testing results by "accept" or "reject" the sample. Selected testing procedures as in Ref [9] are adopted for the studies of raw materials and 2-pack epoxy paints for offshore oil & gas industry[2–4].

According to Chan and Teo (2013) [2], there are a few existing Standards on FTIR fingerprinting of the wet paints from the mixing tank immediately after each batch of the production in the paint factory, such as ISO 12944-9:2018 [10], ASTM D2621-87(2016) [11] and ASTM D7588-11(2018) [12]. However, there are insufficient details and guides stated in those Standards for the interpretation of FTIR spectra, *i.e.* the practical approaches on estimation of the degree of similarity between two FTIR spectra for the same or different wet paints.

Due to limited printed pages, full article can be accessed electronically on IMM website
https://www.iomm.org.my/related-publications-on-coating-fingerprinting/

Presentation will be judged against the following criteria:

JUDGING CRITERIA

1. Structure of the presentation and clarity of explanation and argument
2. Standard of presentation
3. Personal enthusiasm for the subject
4. Ability to deliver presentation spontaneously
5. Technical content of the presentation
6. Clarity and relevance of any visual aids used
7. Ability to deliver a concise and meaningful summary at the end of presentation
8. Ability to present within the specified time allocated
9. Ability to handle judges' questions

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2020 MLC MATERIALS LECTURE COMPETITION

Organized by:

UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

IMM

IOM3
The Institute of Materials, Minerals and Mining

For more details, please visit event facebook at:
https://m.facebook.com/Materials-Lecture-Competition-2020-100249478113823/

2020 MLC
MATERIALS LECTURE COMPETITION

INTRODUCTION

Materials Lecture Competition (MLC) is a National event mainly organized by Institute of Materials, Malaysia (IMM) and Institute of Materials, Minerals and Mining (IOM3) UK. This nation-wide competition is an initiative intended to enhance awareness among young Materials Scientists and Engineers in Malaysia on the importance of Materials Engineering and sustainability in the advancement of technology and humankind.

For MLC 2020, Universiti Putra Malaysia (UPM) has been given the honour by IMM to host the competition alongside with IMM and IOM3. We look forward to welcome all participants for the Semi Final and Final Competition that will be held in UPM, Serdang, Selangor.

RULES AND ELIGIBILITY

The Materials Lecture Competition 2020 (MLC 2020) is open to any profession or students in Malaysia (except academic staff). They must not be over 28 years old on the 1 July 2020. Participant must deliver a 15-minutes presentation on a topic related to Materials or Minerals Science and Engineering. The topic may cover on the participant's current research work or project from the following areas of interest (but not limited to) Materials Development, Characterization, Processing and Applications, Minerals and Geologically related disciplines.

SUBMISSION PROCEDURE

Confirmation

Once the submission has been processed and successful, an e-mail confirmation will be sent to the respective university representative/IMM.

Detail Submission

University representative/IMM is responsible to submit the participant detail via online form together with the name, a copy of IC (Malaysian Participant) or Passport (International Participant), phone number, e-mail address and an abstract of a maximum of 150 words.

*online google form will be available in February 2020 .

Internal Competition

University student participant shall attend the internal competition organized by their respective university to select only one (1) student to participate in the Semi Final of the MLC 2020.

Participants from the industries shall attend the internal competition organized by IMM to select only one (1) participant to compete in the Semi Final of the MLC 2020.

Participant

University/IMM will select one (1) winner from their internal competition to compete in the Semi Final of the MLC 2020.

PRIZES

The winners of MLC 2020 will also receive a certificate and a plaque. The Champion of MLC 2020 will represent Malaysia to attend and compete in the Young Persons' World Lecture Competition 2020 (YPWLC 2020) which will be held in Hong Kong organized by IOM3.

IMPORTANT DATES

Structural Characterization at Various Melting Temperatures of Nanosilver-Doped Polyphenylene Sulfide Conductive Polymers

Introduction

Conductive polymers are challenged with limited charge transfer; hence this limits its applications to microelectronics. For high voltage applications, charge mobility is essential to allow high conductivity and reduce transmission loss. In this view, Polyphenylene sulfide (PPS) has been known to be doped to enhance the conductivity with various material such as copper and carbon nanotubes [1, 2]. Due to its high conductivity, silver is the most promising candidate [3]. However, identifying appropriate melting temperature of the solid solution remains a challenge for effective doping process. Nevertheless, by reducing the size of silver to nanoparticles, the diffusion of Nanosilver could be most effective.

Investigation Procedure

Experiments were conducted with varying melting temperature in the range of 300-480 °C. The threshold melting temperature was determined by melting process in the range of 300-400°C but the effective melting temperatures were observed by melting the solid solution within the range of 400-480°C. The detail method was reported in authors' previous research [4, 5]. Morphology evolutions from these experiments were studied using SEM.

Discussion on Threshold Melting Temperature

In the temperature range from 300 °C to 360 °C, it was observed that the solid solution had not melted completely within the 15 minutes. In other words, at these temperatures the heat energy was insufficient to excite thermally the solid solution i.e. melt the entire mixture and trigger diffusion. When the temperatures were increased to 380 °C and 400 °C, complete melting of the solid solution occurred. The time taken when the mixture started to melt were found drop significantly to below 8 minutes when the melting temperature was increased from 380 °C. It is understood that there is sufficient heat absorbed by the Nanosilver for the continuous heat supplied to melt the polymer. The organometallic hybrid was observed to completely melt at above 380°C and stabilized at 400 ^{0}C within 15 minutes. This indicated that the threshold temperature for melting the solid solution is 380 °C. This temperature is significantly higher than the typical melting temperature of solid PPS found in the literatures of around 280-290 °C [6, 7]. This threshold temperature for melting led the process of finding the correlation of thermal effect to the effective melting temperature of the mixture. The relation between the complete melting time and melting temperature are shown in Figure 1. The complete melting time had a significant behavior change from 300 °C to 380 °C. It is observed that the most significant drop occurred between 320 °C to 340 °C. From temperatures 340 °C to 380 °C, the time taken to melt were stabilized afterwards at around 6 minutes. i.e. Melting start time reduced significantly at 380 ^{0}C and stabilized within 400 ^{0}C to 480 ^{0}C.

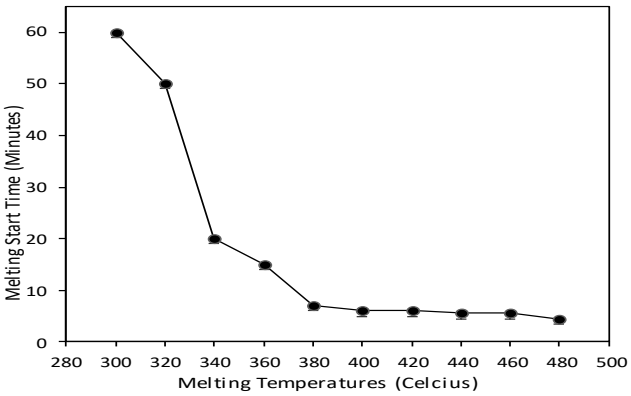

Figure 1 Characteristics graph of melting start time versus melting temperature.

Figure 2 shows microstructure of Nanosilver doped PPS solid solution at 400 ºC where there are bright masses visible across the sample. These are non-uniformly distributed non-melting PPS coagulations However, in this case, the coagulations are insignificant and could only be seen under SEM microscopy.

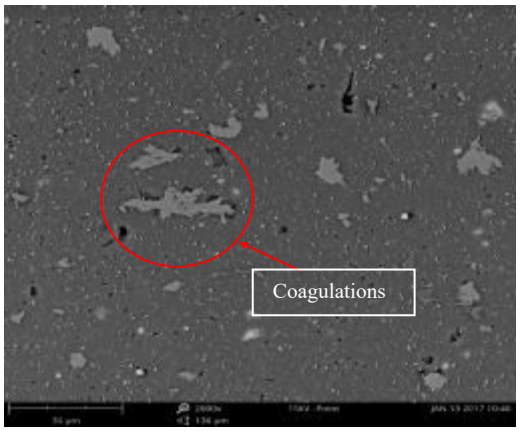

Figure 2 Micrograph of the Nanosilver doped PPS at 400 ^{0}C.

Conclusion

In conclusion, the offset behavior of Nanosilver doped PPS conductive polymer at varying melting temperature was interestingly revealed . Such a finding offers an effective doping procedure for high voltage application of enhanced conductive polymer.

Acknowledgement
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Participation of IMM with IMM-UiTM Student Chapter in Sciences and Technology Carnival 2019

Reported by: Nur Syafiqah Alldin, IMM Secretariat
Reviewed by: N. Hithaya Jeevan, IMM Secretariat

Date: 28th September 2019
Venue: Sports Centre Complex of UiTM Shah Alam

The Sciences and Technology Carnival (CASTECH) 2019 was organised by the Faculty of Applied Sciences (FSG) of Universiti Teknologi MARA (UiTM) on 28th September 2019 at the Sports Centre Complex of UiTM Shah Alam. Motivational talks relating to science and technology and 3-Minute Science Talk Competition were the main events in addition to the Drone Innovation showcases, tour to the science laboratories at the faculty and several research exhibitions by the students. The carnival also featured a promotional talk titled "Let's Join FSG" to attract the students of high schools and matriculation colleges to consider FSG as one of the options to pursue for higher academic qualifications. IMM took the chance to co-participate in the carnival with UiTM-IMM Student Chapter as an exhibitor.

The main objectives of IMM's participation in the carnival were to introduce the Institute and its certification programs to the visitors of the carnival and to promote the membership of IMM. A number of UiTM and college/school students visited IMM's booth in pursuit of getting to know more about IMM and what IMM has to offer. Those who visited the booth were given a goodie bag packed with IMM Materials Mind magazine, brochures of IMM membership and certification programs. There was significant interest shown by students and lecturers alike in IMM membership.

1-Day Conference on Disruptive Technologies in Materials Corrosion and Inspection



Reported by: Ir. Ong Hock Guan, Sarawak Shell Berhad, IMM Corrosion Committee, Chairperson and Leow Chun Ho, Sarawak Shell Berhad, IMM Corrosion Committee, Treasurer
Edited by: Syarifah Nazliah Syed Abdul Rahman, IMM Corrosion Committee, Secretary

Date: 17th October 2019
Venue: Sheraton Imperial Hotel, Kuala Lumpur

The 1-day Conference on "Disruptive Technologies in Materials Corrosion and Inspection" Conference organized by the Corrosion Committee of Institute of Materials, Malaysia (IMM) on 17th October 2019 ended on a successful note with participation from 135 delegates, 40 undergraduate students, 20 exhibitors, 11 speakers and 7 sponsors. The conference began with an opening address by IMM President, Ts. Mr. Mohd. Azmi Mohd. Noor followed by keynote presentation by Head of Centre for Corrosion Research, University Teknologi Petronas (Deputy Co-Chair of IMM Corrosion Committee), Assoc. Prof. Ir. Dr. Mokhtar Che Ismail.

Figure 1: Opening speech by Ts. Mohd. Azmi Mohd. Noor

Figure 2: Keynote presentation by Assoc. Prof. Dr. Mokhtar Che Ismail

The annual event has provided an effective platform in creating useful networks between users and vendors, learning new technologies and sharing of experience among professionals from various industries and academia. There was a total of 9 technical presentations with PETRONAS sending the most delegates (25 pax with 2 presenters), followed by Sarawak Shell Berhad with 8 delegates and a speaker.

Figure 3: Keynote presentation by Assoc. Prof. Dr. Mokhtar Che Ismail

Figure 4: Engaging presentation from one of the presenters

The vendor exhibition through-out the day enabled delegates and exhibitors the opportunity to network and had received very positive feedback from the participants. The expert panel session had drawn much attention and constructive engagement between the delegates and presenters.

Figure 5: Networking session during break time

Finally, IMM Corrosion committee would like to express its appreciation to the local and overseas presenters, delegates and the following exhibitors who had participated in the conference:

1. IEV Sdn. Bhd.
2. Integrity Synergy Solutions Sdn. Bhd.
3. Suez Water Technologies & Solution Sdn. Bhd.
4. Temperlite Insulation Sdn. Bhd.
5. Stopaq B.V.
6. Oceaneering
7. Yokogawa Electric (M) Sdn. Bhd.
8. Intertek (ITS Testing Services (M) Sdn. Bhd.)
9. Universiti Teknologi MARA
10. Fortitude Technologies Sdn. Bhd.
11. Protech Integrity Solutions Sdn. Bhd.
12. Norimax Sdn. Bhd.
13. ICP Engineering Sdn. Bhd.
14. Whitebeard Engineering
15. Innocorr Offshore Sdn. Bhd.
16. KB Engineering Coatings Sdn. Bhd.
17. GPT Resources Sdn. Bhd.
18. Universal Corrosion Engineering Sdn. Bhd.
19. Institute of Materials, Malaysia/Materials Technology Education

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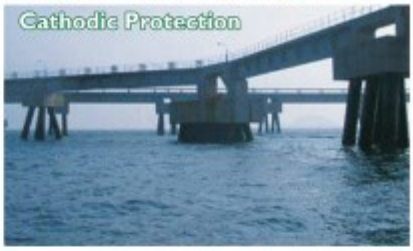

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KLR 0500421

Malaysia Finalist Participation in Young Persons' World Lecture Competition 2019



Reported by: Prof. Dr. Azizah Shaaban (UTeM), UTeM-MLC Committee &
Lam Jia Yong (UPM), MLC 2019 Winner/Malaysia Finalist in YPWLC 2019
Edited by: Prof. Dr Esah Hamzah, Chairperson of Materials Lecture Competition Committee

Date: 10th October 2019
Venue: IOM3 Headquarters, London U.K.

Young Persons' World Lecture Competition (YPWLC) has been organised and held annually by the Institute of Materials, Minerals and Mining (IOM3), United Kingdom (UK) with the objective to encourage young materials scientists and engineers to develop their communication skills. In the modern-day world, it is essential to be able to convey complex technical research output in a more comprehensible way to non-specialist audience. Each year, winners of the national finals from around the world are selected to represent their countries in the world final of YPWLC which is held annually in a different location around the globe.

The competition this year (YPWLC 2019) which was held on 10th October 2019 at IOM3 Headquarters in London, UK was sponsored by Companhia Brasileira de Metalurgia e Mineração (CBMM), and supported by Rolls-Royce. Malaysia was represented by Materials Lecture Competition 2019 winner, Mr. Lam Jia Yong from Universiti Putra Malaysia. He was placed second in the YPWLC 2019 for his lecture on "DNA biosensor based on optical fibre for the detection of pathogen: A novel approach". His presentation summarized his PhD research on the development of a new diagnostic method for leptospirosis (rat urine disease) using optical fibre, a material commonly used in the communication fields. As the runner-up, Jia Yong was awarded prize money of £1,500, a MacBook Air and a certificate. Tamlyn Naidu from South Africa won the first prize and Morgan Lehtinen of Canada came in on third place. Prof. Dr. Azizah Shaaban from Universiti Teknikal Malaysia Melaka (UTeM) also attended the event as a representative of the Institute of Materials, Malaysia (IMM) and to give moral support to Jia Yong.

This year in YPWLC 2019, the nine finalists from all around the world (UK, Malaysia, Brazil, Australia, Canada, South Africa, Singapore, Hong Kong and Russia), were treated to an all-expenses paid trip to London for a week. Aside from the competition, the finalists also took part in a series of activities organised by IOM3. The finalists also visited the Roll-Royce Heritage Site and toured Cambridge University Department of Materials Science and Metallurgy as well as sightseeing tour around London, bowling, and a visit to a primary school, where each of them gave a shorter version of their presentation to a crowd of Year 6 pupils.

Figure 1: Jia Yong delivering his presentation "DNA biosensor based on optical fibre for the detection of pathogen: A novel approach" in front of the judging panel and audience (Photo by courtesy of IOM3, UK)

Figure 2: Jia Yong receiving his prizes as 2nd place winner in the YPWLC2019 (Photo by courtesy of IOM3, UK)

Figure 3: The winners with the judging panel. From left: Dr. Philip Bischler (Chair of judging panel), Jia Yong, Tamlyn Naidu (South Africa, 1st place), Morgan Lehtinen (Canada, 3rd place), Professor Serena Best (President of IOM3), Clémence Dutot (CBMM), Dr. Kate Thorton (Vice-President of IOM3) (Photo by courtesy of IOM3, UK)

Figure 4: The nine finalists were posing for a group photo outside the Institute of Materials, Minerals and Mining (IOM3) (Photo by courtesy of IOM3, UK)

Plant Visit to Jotun Paints (M) Sdn Bhd

Reported by: Norsyazlin Abd Rashid, Universiti Teknologi MARA, committee member of Task Force on Coating Fingerprinting
Edited by: Prof. Ts. ChM. Dr. Melissa Chan Chin Han, Universiti Teknologi MARA, co-chairperson of Task Force on Coating Fingerprinting
Mr. Lee Choon Siong, Jotun (M) Sdn. Bhd., committee member of Task Force on Coating Fingerprinting

Date: 24th October 2019
Venue: Jotun Paints (M) Sdn. Bhd., Lot 9143, PN 38500, Kawasan Perindustrian Nilai, 71800 Nilai, Negeri Sembilan, Malaysia

Committee members of the Task Force on Coating Fingerprinting of Institute of Materials, Malaysia (IMM) visited Jotun Paint (M) Sdn. Bhd. located in Nilai, Negeri Sembilan on 24th October 2019. This visit was organized by Mr. Lee Choon Siong, Jotun (M) Sdn. Bhd. One of the prime objectives of this plant visit was to expose the committee members on the paint manufacturing process as well as the in -house quality control and quality assurance (QA/QC) processes for protective coatings.

Mr. Beh Yong Hooi, Nilai Factory Manager of Jotun Paint Malaysia, welcomed all the guests during the plant visit. This was followed by a short briefing by Mr. Ismail on the plant safety and Mr. Beh Yong Hooi on Jotun's plant operation and business activities. Established in year 1983, Jotun Malaysia is a subsidiary of Jotun A/S in Norway. The Norway headquarters office is located at Gimle, Sandefjord and the Malaysia headquarters office is located at Shah Alam, Selangor. The Jotun Group is one of the market leaders for oil & gas, infrastructure, marine, energy and petrochemical industries.

Figure 1: Briefing by Mr. Beh Yong Hooi on the company's profile and Jotun products

In 2009, Jotun Singapore embarked on a journey with Jotun Malaysia to form a Liger operation. Singapore closed its production facilities in December 2011. Paints are now being shipped from Malaysia factory daily. Then, Jotun Singapore officially merged with Jotun Malaysia in July 2016 to form Jotun Liger with one management team but as two separate entities for statutory purposes. Presently, Jotun Singapore operates out of its Sales-Service-Logistics and Training Centre at 37 Tuas View Crescent. While, Jotun Malaysia operates out a waterbone factory in Shah Alam, a solvent based factory and powder coating factory in Nilai.

The IMM committee members were briefed on the overview of the manufacturing plant, manufacturing processes, research & development for protective coatings; and lastly on QA/QC processes. The tour began with the visit to the mixing tanks of the paints. Then, members visited the storage compartments of raw materials and paints for both fresh and retained samples. Members were exposed to various QA/QC tests at Jotun's in-house laboratory and were impressed by the company's readiness for the implementation of coating fingerprinting in near future. IMM thanked Jotun Paints (M) Sdn. Bhd. for hosting this plan visit.

Figure 2: Briefing by Mr. Greg Lim on the QA/QC processes and the implemention Coating Fingerprint exercise for in-coming raw materials and paint products

Figure 3: Front row from left to right: Mr. Mohammad Ariff Sukur (Shell), Mr. Edison Mandak (Shell), Ms. Norsyazlin Abd Rashid (UiTM), Mr. Beh Yong Hooi (Jotun), Mr. Lee Choon Siong (Jotun), Ms. Suhaila Idayu Abdul Halim (UiTM).
Second row from left to right: Ms. Hairunnisa Ramli (UiTM), Ms. Ismaliza Ismail (LGM), Mr. Hilton Smith (Shell), Assoc. Prof. Dr. Yu Lih Jiun (UCSI), Ts. Dr. Chew Khoon Hee (TAR UC), Dr. Mahmood Anwar (Curtin University), Prof. Ts. ChM. Dr. Melissa Chan Chin Han (UiTM), Mr. Quah Kean Gin (Jotun), Mr. Mark Hew Yoon Onn (UCE), Mr. Mohamad Ikmal Hisham Ashari (MTE).

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2nd International Conference on Materials Technology and Energy

Reported by: Ir. Dr. Edwin Jong Nyon Tchan, IMM Miri Chapter Chairman

Date: 6th – 8th November 2019
Venue: Curtin University Malaysia, Miri, Sarawak

The 2nd International Conference on Materials Technology and Energy (ICMTE 2019) was successfully held for the second time in Miri, Sarawak at Curtin University Malaysia (CUM) from 6th to 8th November 2019, inclusive of the first two days of oral technical presentation and on the third day, all delegates were given the free choice to choose either participating in the half-day of welding masterclass in the interpretation of industry welding codes to ASME Section IX requirements or a half-day technical and educational visitation to the Bio Valley Park pilot plant which is equipped with state-of-the-art facilities and equipment located at CUM.

Based on the conference registration records, ICMTE 2019 had again attracted over 120 conference delegates with varying international backgrounds from Australia, India, China, Indonesia, Singapore, Saudi Arabia, Brunei, and within various states of Malaysia, including scholars, researchers, industrial professionals and practitioners in the fields of Materials and Corrosion Engineering, Green Technology, equipment manufacturing, electrical & electronics, Green Energy and all other related industrial sectors. From the two-day conference, it was recorded that the 2nd ICMTE had covered a total of seven (7) keynote speeches and 54 technical and research papers including engineering, technological and scientific aspects, such as Materials & Manufacturing, Green Energy, Green Materials, Materials Construction and Industrial Technology.

This international conference was jointly organized by The Institution of Engineers Malaysia Miri Branch (IEM-Miri), Institute of Materials, Malaysia, Miri Regional Chapter (IMM-Miri), and Curtin University Malaysia (CUM) with the conference theme, "Advanced Materials, New Energy Technologies, Disruptive Technologies, Digital Innovations". In addition, the conference organizing committee also expressed their sincere gratitude to all conference sponsors as the conference was financially sponsored by Serba Dinamik (SD), Sarawak Convention Bureau (SCB), Ministry of Tourism, Arts and Culture Sarawak, Minister of Transport Sarawak and supported by the Miri City Council (MCC) (Figure 1). The conference also enjoyed the honor of Institute of Physics United Kingdom (IOP) as partner publisher for its conference proceedings.

On the first day of the conference, all registered speakers and participants came early to report for the conference (Figure 2).

Figure 1: Backdrop of the 2nd ICMTE-2019

Figure 2: A view on the registration of conference participants

The ICMTE 2019 was officiated by Ir. David Lai Kong Phooi, President of The Institution of Engineers, Malaysia (IEM) (Figure 4). Also present were Dr. Yam Ke San (Organizing Chairperson of ICMTE 2019 as indicated in Figure 4), Pro Vice-Chancellor, President and Chief Executive of Curtin University Malaysia, Prof. Jim Mienczakowski, Deputy Pro Vice-Chancellor, Prof. Beena Giridharan, Acting FOES Dean Assoc. Prof. Vincent Lee and IMM Miri Chapter Chairman, Ir. Dr. Edwin Jong as evident in Figure 5.

Figure 3: IEM President as the Guest of Honor for the conference; 2nd ICMTE Organizing Chairman delivered his welcoming speech ; ICMTE-2019 Opening Ceremony officiated by IEM President

On the first day evening of the conference, the joint organizing committee also hosted a welcoming conference dinner at Grand Palace Hotel, Miri with 10 banquet tables for all registered participants from 6.30 pm until 11.00 pm. During the dinner, several Sarawak cultural dances (i.e. Melanau and Bidayuh or Land Dayaks) were presented to welcome our conference participants (Figure 4).

Figure 4: Welcoming Conference Dinner at Grand Palace Hotel, Miri, Sarawak

From the participants' feedbacks of this conference, it was evident that this conference had indeed provided them with an effective platform amongst the industrial practitioners and academic researchers to have an international networking and exchanging technical ideas, knowledge and information on developments and innovations in the fields of materials engineering, green technology and green energy, and particularly eco-friendly and long-term sustainable solutions in structures, materials and manufacturing, and the environment, energy and resources striving towards achieving the requirements of Industry Revolution 4.0. ICMTE 2019 also served to create linkages globally and cooperation between academia and industries, as well as innovative solutions for the materials technology and green energy for industries from all sectors. In developing countries such as Malaysia, the materials technology and green energy sectors play an important role in the national development. The dissemination of cutting-edge technology and research are also an essence towards creating national development and improvements in order to keep abreast globally with the advancement of technologies as per the Industrial 4.0 criteria.

In addition, the parallel oral presentations covered various key research areas of materials technology and green energy such as materials engineering, materials manufacturing, green materials, green energy, materials construction, industrial technology and their applications in oil and gas, petrochemical, renewable energy, wastewater treatment, produced water treatment, cleaner production technology, hydro and solar power generations.

The two-day conference was officially completed and closed with a vote of thanks by IMM-Miri Chairman, Ir. Dr. Edwin Jong to all conference participants. He further highlighted that the joint organizing committee have also decided to organize the 3rd ICMTE in 2021 and would like to meet all participants again in Miri, Sarawak in 2021.

On the third day of the conference, all participants were given a free choice to choose either a half- day participating in the industrial welding masterclass (Figure 5) or a half-day technical and educational tour to the Bio Valley Park pilot plant located at Curtin University Malaysia Figure 6).

Figure 5: A view of the Industrial Welding Masterclass conducted by Dr. Bernard Sim with some of the conference participants

Figure 6: Bio Valley Technical and Educational Visitation at CUM

After the half day industrial welding masterclass and the educational tour to the Bio Valley Park pilot plant; i.e., in the afternoon of the third day, IMM-Miri committee members had voluntarily arranged a free historical tour for some conference participants to visit some of Miri City attractions, especially the Marina Park City where the huge Seahorse statue, the mascot of Miri City is located, the Miri Grand Old Lady (Miri Oil Well No. 1) (Figures 7) which is located on Canada Hill in Miri, Sarawak. Canada Hill is also known as Bukit Telaga Minyak by the locals and it is popular for its first oil well drilled in 1910.

On behalf of IMM-Miri, we would like to bid farewell to all conference participants to have a safe journey back home and hope to see all of you again in the 3rd ICMTE in 2021.

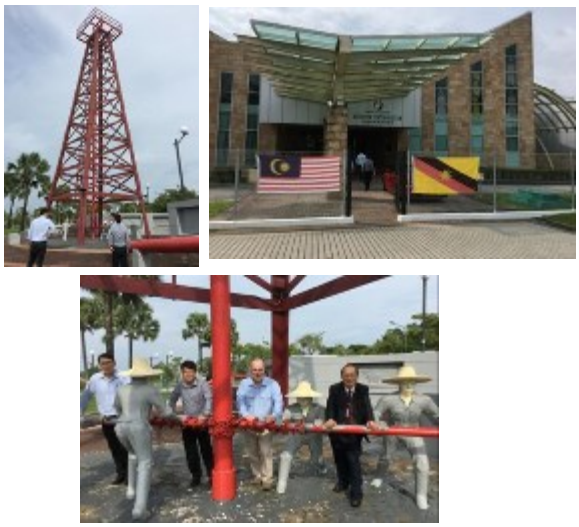

Figure 7: A historical tour for some conference participants

IMM-UiTM Student Chapter Academic Visit to 1-Day Conference: Disruptive Technologies in Materials Corrosion and Inspection

Reported by: Nur Aqilah Mohd Zunaidi, IMM-UiTM Student Chapter secretary
Reviewed by: Ts. Dr. Tay Chia Chay, Universiti Teknologi MARA, Shah Alam

Date: 17th October 2019
Venue : Sheraton Imperial Hotel, Kuala Lumpur

On 17th October 2019, a total of 20 students from IMM-UiTM Student Chapter, Universiti Teknologi Mara (UiTM), Shah Alam participated in Disruptive Technologies in Materials Corrosion and Inspection Conference 2019. This conference was organized by the Corrosion Committee of Institute of Materials, Malaysia (IMM) at Sheraton Imperial Hotel, Kuala Lumpur. This 1-day conference focused on the disruptive technologies in corrosion as well as inspection management to exhibit the latest technologies that are relevant with the era of Industry Revolution 4.0 such as robotics, automation, data analytics and artificial intelligence. The event started with an opening speech by the IMM President, Mr. Mohd. Azmi Mohd. Noor and continued with speech by expert speakers and panels from various industries related to corrosion management. Realizing the importance of Industry 4.0, experts and engineers from industries as well as academicians and scientists presented on the latest corrosion technologies and smart technology. The speakers and professionals have shared their vast experiences in handling the corrosion issues and the latest technology used in the industry through specific case study.

The students also toured the exhibition hall during the conference and grabbed a chance to meet with the exhibitors, professionals and experts in the industry who were showcasing and sharing their technologies as well as innovations and products related to corrosion. It was a great opportunity for the students to enhance their knowledge in materials science and technology studies as well as instilled interest in scientific innovations. The input of the conference was beneficial and informative to the students with a great speech from academicians and experts from various industry. Through this event, students also extended their networking with industries. Last but not least, student members from IMM-UiTM Student Chapter would like to express our sincere gratitude towards the Corrosion Committee of IMM for inviting us to join this professional, warm and friendly event. We hope to grab the opportunity to join this event in the future.

Figure 1: : Group photo of IMM-UiTM Student Chapter who attending the conference

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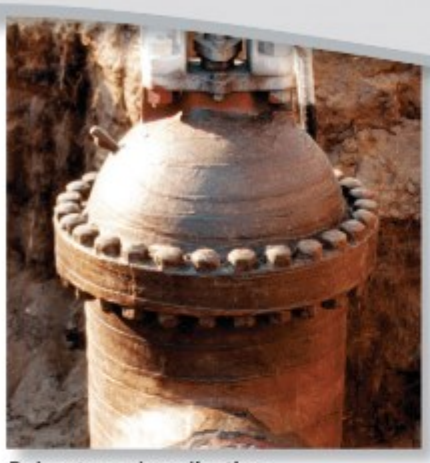

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IMM International Applied Vibration Conference 2019: "Vibration Technology in the Era of Industrial Revolution 4.0"

Reported by: Muhammad Fariz Fauzi Bukhari, Serba Dinamik Group Bhd
Reviewed by: Abdul Qaiyum Alidin, IAViC2019 Conference Chair, Serba Dinamik IT Solutions
Edited by: Mohammad Syafiq Syahmi Suhaimi, IAViC 2019 Organizing Committee

Date: 13th – 14th November 2019
Venue: Sheraton Imperial, Kuala Lumpur

In the current era of Industrial Revolution 4.0 (IR 4.0), we have witnessed countless disruptions in multiple industries caused by technological advancements in the form of Industrial Internet of Things, Artificial Intelligence, Automation, Predictive Data Analytics and more. IR 4.0 pillar technology also gains traction within the realm of vibration technology that is prevalent as diagnostic and analytical tools across various industries such as oil and gas, automotive, marine and more. Therefore, Institute of Materials, Malaysia (IMM) Vibration Committee proudly hosted its annual International Applied Vibration Conference (IAViC) 2019. As the pioneer of vibration technical community in Malaysia, IMM Vibration Committee was proud to organize its annual event, the IAVIC 2019 with the theme 'Vibration Technology in the Era of IR 4.0'. The event began with a strong address on vibration technology relevance in IR 4.0 through the welcoming remarks by Dato' Dr. Ir. Mohd. Abdul Karim Abdullah, the Chairman of IMM Vibration Committee. This was followed by the opening speech by the President of IMM, Ts. Mohd. Azmi Mohd. Noor and the first presentation 'Acoustic Signal Based Fault Diagnosis using Machine Learning' by the distinguished Prof. Mohammad Fard, from Royal Melbourne Institute of Technology (RMIT).

Following the morning tea break and visit to the exhibition booths, the stage once again welcomed Dato' Dr. Ir. Mohd. Abdul Karim Abdullah, the Group CEO of Serba Dinamik Holdings Bhd to deliver a technical Keynote presentation on 'The Future of Vibration Monitoring with SMART Maintenance'. SMART Maintenance is a cloud-based software developed in-house by Serba Dinamik IT Solutions Sdn Bhd and partners to serve as an integrated Digital Transformation Platform empowered with IoT Frameworks, Big Data Analytics, Artificial Intelligence and Immersive Technology (XR). The event maintained the wide range of exciting topics by inviting the third speaker of Day-1, Kdr. Ir. Dr. Arman Ariffin, from Royal Malaysian Navy to deliver his presentation on 'Vibration Analysis for Ship Acoustics Signature'. The morning session continued with Dr. Mohd. Amzar Azizan, senior lecturer from UniKL on 'How Vibrations in Cars Make Drivers Sleepy' based on his reputable background as trainer in helicopter health monitoring and have managed for over 30 helicopters operated globally. Mr. Shahriman Sahib, the HUMS Manager for Weststar Aviation Services Sdn Bhd presented the development and effectiveness of 'Vibration Health Monitoring' in terms of helicopter operational safety. With industrial case studies and reports presented as well, he managed to encapsulate the niche topic clearly and ended the morning session of Day-1.

Figure 1: : Group Photo Session on Day-1

After the group-photo session and luncheon, Mr. Paul Crowther presented on 'Vibration Risks and Mitigation Techniques when Debottlenecking on Petrochemical and Oil & Facilities' followed by Ir. Salim Sumormo from PETRONAS, on 'Remote Machinery Monitoring & Prescriptive Diagnostic System'. The evening session began with a presentation delivered by Mr. Lorenzo Perez, Bently Nevada Application & Solution Architect for APAC at Baker Hughes. Mr. Perez delivered a highly technical content on 'Gearbox Diagnostic with Sideband Energy'. Mr. Nizmar from MARii then presented his talk entitled 'New Horizons for Data Driven Industrial Smart Data' by focusing on digital transformation, digitalization, electrification and mechanization also a little bit word on how smart manufacturing with Big Data Analytics (BDA) and Cloud Computing. The last technical presentation of the day was delivered by Mr. Khairul Anwar from PETRONAS who shared the fundamentals of PROTEAN for it to be able to detect the anomalies related to vibration issue and how it instigated best practices on data-driven maintenance by providing accurate insights to the end user.

Capping off the exciting first day of IAViC, the stage welcomed distinguished panellists for the first forum of the event: 'Vibration Technology in The Era of Industrial Revolution 4.0'. Moderated by Assoc. Prof. Ir. Dr. Nadiahnor Md. Yusop from Universiti Teknologi MARA, the panellists for the forum were Dato' Dr. Ir. Mohd. Abdul Karim Abdullah, Prof. Mohammad Fard, Dr. Qing Ou and Ir. Mohd Syukri Mohd Khalid. This forum thoroughly dissected the current scene of IR 4.0 in Malaysia and probing the question of our readiness to become the front-runner of vibration technology in this current industrial revolution. Each panel member successfully provided insightful academic and industrial perspectives to the probing questions delivered by the moderator and sharing their current initiatives.

Carrying the momentum of Day-1, the first presentation for Day-2 of IAViC 2019 was on automotive ergonomics, delivered by Prof. Reza Jazar of RMIT University, Australia. He provided a useful insight on 'Flat Ride Vibration Optimization and Ride Comfort' where he highlighted the subject of vibration mode and vehicle design to relate to the flat ride condition. Ir. Mohd Syukri from Sarawak Shell Bhd wasted no time going into the deep end of oil and gas equipment vibration analysis with his topic of 'Machinery Reliability Vibration Monitoring without Noticeable Shaft Vibration Excitation for Assessment'. The session continued with Ir. Dr. Zainal Fitri Zainal Abidin from University Kuala Lumpur Malaysia France Institute (*UniKL MFI*). This decorated academician provided a unique content to the conference by focusing his discussion on current noise & vibration regulations imposed on automotive business and how it affected the consumer, automakers and the environment. Following his presentation and morning break, Mr. Kazuhito Kato, from NHK Spring Co Ltd, maintained the theme of automotive vibration as he presented on 'Quantitative Evaluation and Model-Development for Automotive Seat Ride Comfort'.

Concluding the morning session was Forum 2: 'Recent Advances of Vibration Technology Applied in Vehicle and Transportation Engineering'. Joining the session moderated by Prof. Dr. Andy Tan Chit Tan of *University Tunku Abdul Rahman (UTAR)* were the panellists Assoc. Prof. Ir. Dr. Zainal Fitri, Mr. Kazuhito Kato, Mr. Abdul Qaiyum Alidin and Mr. Izwan Sabri. The distinguished line up of vibration experts in the transportation and automotive industry were able to provide a holistic view on the past, present and approaching technological capabilities in the industry. After the lunch and exhibition tour, the conference continued with the first afternoon session by Dr. Patrick from Doshin Rubber Products (M) Sdn Bhd on 'Rubber Isolation Technology in

Mitigating the Effects of Vibration'. Dr. Patrick shared the working concept of a base-isolated structure to the high damping natural rubber bearings (HDNRB). He also highlighted the major achievements and statistical data of HDNRB performance which has been crucial to the success of Doshin Rubber. Shortly after, Dr. Qing Ou from New Zealand representing Agen Ltd came on stage to present on IR 4.0 pillar technology, specifically on 'How Internet of Things Change the Way We Do Machine Condition Monitoring'.

The IAViC 2019 ended well with Forum 3 entitled 'Issues and Potential in Human and Machine Vibration' moderated by Dr. Ahmad Salahuddin from Universiti Putra Malaysia. The invited panel members Prof. Reza Jazar of RMIT University and Dr. Amzar Azizan of the Malaysian Institute of Aviation Technology (MIAT), representing the research universities; Mr. Shahriman Sahib from the WESTSTAR Aviation and Ir. Sundralingam from PETRONAS representing the industries. Human-machine vibration research is reviewed from the point of view of how this working environment condition affects different types of human performance capabilities. Concluding the conference, the closing remarks were given by IAViC 2019 Conference Chair from Serba Dinamik IT Solutions, Mr. Abdul Qaiyum who briefly spoke about the key items to wrap up the whole 2-days conference successfully.

In conclusion, at IAViC 2019 these are 10 brief key items that has been concluded from the 2-days conference:

IAViC as a conference this year has successfully gathered speakers and participants from Malaysia and also internationally such as Australia, Japan, New Zealand, and Europe, and this conference has become a platform for members especially experts to share cutting edge technology and to discuss latest updates or matters on vibration related topics.

The Vibration community at IAViC 2019 acknowledges vibration as a specialised field that will also be facing IR4.0 disruption and IR 4.0 is very important to be embraced across industries especially oil and gas, automotive, rail, aviation & aerospace, maritime, and transportation & infrastructure.

Figure 2: : Group Photo Session on Day-2

Big Data and Artificial Intelligence has been highlighted as key enabler for academics and industry players to adopt in research and industrial applications related to vibration technology.

IAViC awill continue to be a platform to encourage more technology-based proposals which have potential to be applied such as defence technology for maritime engineering.

Additional support is needed for industrial based conference, such as IAViC, in Malaysia in order to attract more interests or activities in vibration technology.

The Vibration community at IAViC 2019 has addressed the importance of IR 4.0 and IAViC as an annual international gathering in the future will enable to accelerate many significant collaborations between academia and industry.

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1-Day Workshop on Thermal Behavior of Polymers

Reported by: Dr. Lee Xiau Yeen, Tunku Abdul Rahman University College, Secretary of IMM Polymer Committee
Suhaila Idayu Abdul Halim, Universiti Teknologi MARA, Organizing Chairperson of 1-Day Workshop on Thermal Behavior of Polymers
Reviewed by: Ts Dr. Chew Khoon Hee, Tunku Abdul Rahman University College, Chairman of Polymer Committee

Date: 7th Nov 2019
Venue: Faculty of Applied Sciences (FSG), Universiti Teknologi MARA (UiTM), Shah Alam

The 1-Day Workshop on Thermal Behavior of Polymers was successfully held in the Faculty of Applied Sciences (FSG), UiTM Shah Alam on 7th Nov 2019. This event was organized by the Postgraduate Chemistry Club (PCC), an association club of UiTM and Institut Kimia Malaysia (IKM) and IMM was one of the collaborating partners together with ITS and SETARAM.

The objective of this workshop was to offer a comprehensive training comprising of theoretical and practical approaches that focused on the thermal properties of polymers. Besides, it also provided a platform for sharing of knowledge among the participants and speakers.

The workshop was officiated by Prof. Dr. Mansur Ahmad, Head of the School of Industrial Technology, FSG. Prof Dr. Mansur Ahmad acknowledged and appreciated the initiative taken by PCC, co-organizers and collaborators in order to make this event a success.

The workshop started with a detailed introduction on polymers such as concept of polymer, polymer structure, polymer classifications and its properties by Prof. Ts. Dr. Chan Chin Han from FSG, UiTM, who is also the advisor of PCC. Dr. Wong Yoke Ming of ITS shared with the participants the general working principles and operations of TGA and DSC before the hands-on session.

Prof. Ts. Dr. Chan Chin Han then introduced the techniques used for analyzing TGA and DSC results. Handouts of various thermal properties data were distributed to participants for practicing the analysis techniques. This was followed by demonstration and explanation on how to operate a DSC instrument by Ms. Phene Neoh of ITS. Prof. Emeritus Dr. Jean -Marc Saiter from the University of Rouen (France) shared his experience in performing the thermal analysis tests as well as his knowledge on interpretation of TGA & DSC results.

The workshop concluded with the closing remarks by the Organizing Chairperson, Ms. Suhaila Idayu Abdul Halim from UiTM. In her closing remarks, she expressed her greatest appreciation for the commitment, effort and cooperation from all PCC committee members, co-organizers, collaborators, speakers and participants for making this workshop fruitful and a big success.

32nd Asian Welding Federation Meeting

Reported by : Dr. Mohamed Ackiel Mohamed, Serba Dinamik Group Bhd, IMM Council Member

Date: 23th – 25th October 2019
Venue: Ramada Encore Gimpo Han River Hotel

The 32nd Asian Welding Federation (AWF) Meeting was held on 23th - 25th October 2019 at the Ramada Encore Gimpo Han River Hotel. It was jointly co-hosted by the Korean Welding and Joining Society (KWJS) and the Korean Welding Industry Cooperative (KWIC) in conjunction with Tool Tech 2019 exhibition, which was held at the Korea International Exhibition Center (KINTEX) in Seoul. Participants included delegates from Korea, China, Japan, Indonesia, Malaysia, Myanmar, Philippines, India and Singapore.

On the first morning, the delegates met at the Ramada Encore hotel, where the meeting commenced with the review and approval of the previous council meeting.

Figure 1: During the AWF Meeting

The second day of the AWF meeting began in the morning, with the topic of discussion focusing on the requirements and implementation plan of the Common Welder Certification Scheme (CWCS) in the various member countries. The establishment of a common certification scheme for welders has been a common goal since the founding of the AWF and is an integral part of the federation's aim of providing knowledge, skills, and qualifications to the people of Asia while supporting the Asian countries' economic development.

The Indonesian Welding Society was happy to announce that they had passed the CWCS application and are now ready to offer the CWCS certification system.

On the same afternoon, the delegates were brought to the KINTEX convention building, where the Tool Tech Exhibition 2019 was held. It was a large and eye-opening event, where the latest technologies available in the manufacturing industry were exhibited, such as virtual and augmented reality solutions, welding and cutting, 3D-printing, robotics and various wearable technologies.

Figure 2: Tool Tech Exhibition 2019

In the evening, the delegates had dinner at the KINTEX convention hall, where the guests were greeted by the hosts KWJS and KWIC. It was a good opportunity for the delegates to network and share about the welding developments and issues in their respective countries.

The third day of the meeting consisted of the AWF workshop and also auditor examination.

Participation of IMM in Kuala Lumpur Engineering Science Fair 2019

Reported by: Assoc. Prof. Dr. Lim Teck Hock, Chairman of IMM Student Chapter

Date: 1st - 3rd November 2019
Venue : The MINES International Exhibition & Convention Centre, Kuala Lumpur

As part of IMM's continuous commitment to fulfil its mission to promote public understanding and appreciation of Chemistry, Student Chapter of Institute of Materials, Malaysia (IMM) participated in the recent Kuala Lumpur Engineering Science Fair (KLESF) 2019 event, held from November 1st to 3rd, 2019 at the MINES International Exhibition & Convention Centre.

KLESF has proven itself as an effective platform for the promotion of Science, Technology, Engineering and Mathematics (STEM) education in Malaysia since first organized in 2013 by the Malaysian Industry-Government Group for High Technology (MIGHT), Asean Academy of Engineering and Technology (AAET), Institution of Engineers Malaysia (IEM) and Universiti Tunku Abdul Rahman (UTAR).

KLESF enters its fifth edition in 2019 with an expected 70,000 visitors. This annual event has managed to attract more than 20 private and public universities, over 50 companies, multiple government agencies, and for foreign exhibitors from China and Hong Kong to participate in the three-day event.

Other than to promote IMM to the public, the IMM Student Chapter together with dedicated staff from IMM itself, Materials Technology Education Sdn. Bhd. (MTE) and UTAR-Student Chapter with an aim to enhance interest in Sciences and Engineering as a part of STEM education organized a hands-on workshop to demonstrate to the public on Materials Science that could be interesting, fun and relevant to both our daily life and our country's economy.

IMM's Student Chapter, with assistance from members of UTAR-IMM Student Chapter ran a workshop on 'Do It Yourself (DIY) Badge'. Visitors created their own badge designs and painted on a polymer which upon heating, the polymer shrank and hardened permanently. The hardened piece of polymers were then made into keychains for them to bring home.

Figure 1: Photos compilation during the KLESF 2019 event

Optimizing Chemical Injection Performance

FluidCom™

Fully automatic chemical injection controller

A Game Changer in Chemical Injection

The FluidCom™ chemical injection solution provides optimal performance with an innovative and cost saving technology.

Application

The FluidCom™ is a fully automatic chemical injection controller for Scale Inhibitor, Corrosion Inhibitor, Emulsion Breaker, Antifoam and more.

Its unique patented technology is considered a worldwide game changer, enabling significant CAPEX and OPEX savings.

By ensuring reliable and accurate chemical dosage, the end users obtains a controlled and efficient use of production chemicals by optimizing the oil and gas production, improve water quality and secures system integrity.

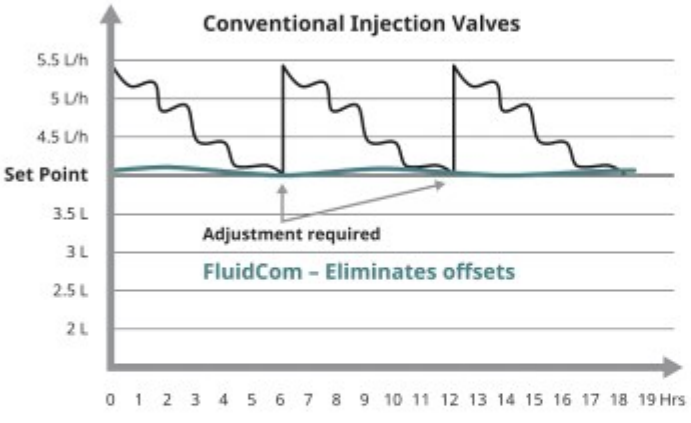
Features

- Includes the functions of:
  - ✓ Flow Control Valve
  - ✓ Actuator
  - ✓ Flowmeter
  - ✓ Controller
- Stable and reliable injection rate – significant reduced OPEX for operations
- Reduced size and weight
- Independent of variations in process parameters
- Self cleaning function – No regular maintenance required, hence improved HSE
- Enables real-time control and monitoring/digitization

General Specifications: FluidCom Model-S2:

Flow Range	Standard 0.6 – 30.0 L/hour (Extended flow range available)
Design pressure	Standard - 5000 psi (345 bar)
Operating temperature ambient	-20°C – +55°C
Material enclosure	AISI 316SS
Material wetted parts	Standard - AISI 316 SS/PEEK/FFKM (other available on request)
Power supply	230 V AC 50/60 Hz
Dimensions and Weight	Ø219 mm x 375 mm, 19 kg
Explosion proof	ATEX and IECEx
Ingress Protection	IP66
Valve failure mode	Closed
Interface pipe connection	Standard - 1/4" NPT Female (other available on request)
Communication	Local Display with Push Button
	4 to 20 mA DC, two-wire transmission with HART (HART7.1)
	Individual 4 to 20 mA DC for set-point (Option)

Increased Accuracy and Reliability



Yokogawa TechInvent AS identified that operators were finding it challenging to deliver stable and reliable injection rates using conventional technology.

This is mainly due to effect of changes in temperature, variations in differential pressure and cleanness of chemical injected.

FluidCom will provide stable injection rate over time independent of changes in temperature, pressure and chemical cleanness. Providing huge OPEX savings and confidence that system integrity are safeguarded.

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IMM Council 2020 – 2022

Prepared by: Prof. Ts. ChM. Dr. Melissa Chan Chin Han, Honorary Secretary of Institute of Materials, Malaysia

Dato' Dr. Ir. Hj. Mohd Abdul Karim Abdullah from Serba Dinamik Group Bhd filled the post of President of IMM. Ts. Dr. Chew Khoon Hee from Tunku Abdul Rahman University College was elected as Deputy President; Prof. Ts. ChM. Dr. Melissa Chan Chin Han from Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam was elected as Honorary Secretary and Dr. Mohamed Ackiel Mohamed from Serba Dinamik Group Bhd was elected as Honorary Treasurer. The office-bearers of these positions will commence their duties starting on 30th Annual General Meeting of IMM, which will be held on 20th March 2020.

President
Dato' Dr. Ir. Hj. Mohd Abdul Karim Abdullah
Serba Dinamik Group Bhd

Deputy President
Ts. Dr. Chew Khoon Hee
Tunku Abdul Rahman University College

Honorary Secretary
Prof. Ts. ChM. Dr. Melissa Chan Chin Han

Honorary Treasurer
Dr. Mohamed Ackiel Mohamed

Collaboration Between IMM and SIRIM STS Sdn Bhd on Standards Development

Reported by: Reported by: N. Hithaya Jeevan, IMM Secretariat

The Institute of Materials, Malaysia (IMM) in its endeavour towards greater professionalism in its certification activities has signed an MOU with SIRIM STS (a wholly-owned subsidiary of SIRIM Bhd) which provides core services of standards development and related training and consultancy. The collaboration formalised in October 2019 for an initial period of 2 years and renewable thereafter has the principal objective of developing programmes in the areas relating to standards development and promotion of Industry Standards.

SIRIM STS has been involved in standards development over many years and has the proven expertise to enhance IMM in-house standards and also assist in the development of new standards as Industry Standards, all of which will also be used for compliance to IMM's competency certification schemes. IMM's certification courses are well recognized and endorsed in the oil and gas, shipbuilding and construction industries and this new effort in collaboration on standards development is in-line with the aspirations of IMM to continuously uplift and enhance its professionalism in competency development and certification of skilled professionals.

The first project that IMM intends to collaborate with SIRIM STS is the migration of the IMM in-house standard "Coating Fingerprint Overall Procedures for Paint Systems Using FTIR and Other Related Methods" (developed by IMM's Task Force on Coating Fingerprinting) into an Industry Standard and its subsequent promotion.

INSTITUTE OF MATERIALS, MALAYSIA

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDING 31ST DECEMBER 2019

Dear IMM Members,

On behalf of the IMM Council, I am pleased to present the report of the activities of IMM covering the period from 1st January 2019 to 31st December 2019.

1. IMM COUNCIL AND MANAGEMENT COMMITTEE MEETINGS

IMM Management Committee and Council meetings (Term 2018-2020) for the year 2019 were held as follows:

Date	Management Committee Meeting
25th February 2019	5th Management Committee Meeting
16th May 2019	6th Management Committee Meeting
17th September 2019	7th Management Committee Meeting
4th December 2019	8th Management Committee Meeting

Date	Council Meeting
25th February 2019	4th Council Meeting
16th May 2019	5th Council Meeting
17th September 2019	6th Council Meeting
4th December 2019	7th Council Meeting

An election was conducted within the Council, in accordance with Clause no. 6.2.2.2 of the IMM Constitution, for the posts of Deputy President, Honorary Secretary and Honorary Treasurer for the 2020-2022 Council term during the 7th Council Meeting (Term 2018-2020) on 4th December 2019 at the Grand BlueWave Hotel Shah Alam.

In accordance with Clause no. 6.2.2.1 of the IMM Constitution, the position of IMM President for the term 2020-2022 will be filled by the current Deputy President, Dato' Dr. Ir. Hj. Mohd Abdul Karim Abdullah (HF-7442) from Serba Dinamik Group Bhd.

The office-bearers for the remaining key positions for the term 2020-2022 were filled from among the current Council members, as follows:

i) Deputy President: Ts. Dr. Chew Khoon Hee (F-4355) from Tunku Abdul Rahman University College

Proposer : Assoc. Prof. Dr. Lim Teck Hock (F-8210); and
Dr. Yong Soon Kong (AO-7092)

Seconder : Prof. Ts. Dr. Mohamad Kamal Bin Harun (F-0117); and
Mr. Danny Tan Kim Chew (O-7120)

ii) Honorary Secretary: Prof. Ts. ChM. Dr. Melissa Chan Chin Han (F-4118) from Faculty of Applied Sciences, Universiti Teknologi MARA

Proposer : Dr. Yong Soon Kong (AO-7092); and
Ts. Dr. Tay Chia Chay (F-6742)

Seconder : Prof. Ts. Dr. Mohamad Kamal Bin Harun (F-0117); and
Ts. Dr. Chew Khoon Hee (F-4355)

iii) Honorary Treasurer: Dr. Mohamed Ackiel Mohamed (F-8237) from Serba Dinamik Group Berhad

Proposer : Ts. Dr. Chew Khoon Hee (F-4355)

Seconder : Ts. Dr. Tay Chia Chay (F-6742)

2. ACTIVITIES CARRIED OUT IN THE YEAR 2019

DATE	MEETING/EVENT/ ACTIVITY
Corrosion Committee [Chair: Ir. Ong Hock Guan]	
4th March	1st Corrosion Committee Meeting
18th March	Ir. Ong participated in the Industrial Advisory Panel (IAP) for UTP
24th June	2nd Corrosion Committee Meeting
27th June	Seminar on "Corrosion Controls and Prevention in Rail Industry" followed by Site tour to Rapid Depot
19th August	3rd Corrosion Committee Meeting
17th October	1-Day Conference on "Disruptive Technologies in Materials Corrosion and Inspection"
4th December	4th Corrosion Committee Meeting
Education Committee [Co-Chairs: Prof. Ts. Dr. Mohamad Kamal Bin Harun and Ir. Max Ong Chong Hup]	
6th March	Technical Visit to Cenviro Waste Management Facility

Examination and Certification Panel [Chair: Ts. Brian Lim Siong Chung]	
31st July	1st Examination and Certification Panel (ECP) Meeting
22nd August	2nd Examination and Certification Panel (ECP) Meeting
11th October	3rd Examination and Certification Panel (ECP) Meeting
15th November	4th Examination and Certification Panel (ECP) Meeting
Golf Committee [Chair: Ts. Mohd. Azmi Mohd. Noor]	
2nd March	Participation in MOGEC Golf Championship 2019
8th March	Participation in Post Conference Friendly Golf
Insulation Committee [Chair: Mr. Danny Tan Kim Chew]	
August	Discussion with Institute of Corrosion (UK) for Insulation Applicator Training Scheme (IATS).
Materials Lecture Competition Committee [Chair: Prof. Dr. Esah Hamzah]	
14th March	MLC2019 Competition (University Level)
4th April	MLC2019 Competition (Semi-Final)
30th April	MLC2019 Competition (Final)
September	Preliminary preparations/ planning (Checklist & proposed budget between IMM and UPM) for MLC 2020
5th September	Mock Presentation for YPWLC2019 by Mr. Lam Jia Yong, Finalist MLC2019
10th October	2019 Young Persons' World Lecture Competition Final
21st November	MLC2020 Committee Meeting

Materials Mind Editorial Board [Chair: Ts. Dr. Tay Chia Chay]	
January	Publication of Materials Mind Magazine (Issue 23)
April	Publication of Materials Mind Magazine (Issue 24)
July	Publication of Materials Mind Magazine (Issue 25)
October	Publication of Materials Mind Magazine (Issue 26)
Polymer Committee [Chair: Ts. Dr. Chew Khoon Hee]	
22nd March	Forum on "Using Technology to Address Global Plastic & Environmental Issues"
7th November	1-Day Workshop on "Thermal Behaviour of Polymers"
Standard Assurance Committee [Chair: Assoc. Prof. Dr. Amalina Muhammad Afifi]	
21st March	Committee Meeting
2nd – 3rd May	Attended the ISO 17024 Conformity Training (Four committee members)
27th – 30th May	Internal Audit of IMM for the accreditation to MS ISO/IEC 17024
27th June	Internal Audit of IMMR for the accreditation to MS ISO/IEC 17024
17th and 23th December	Verification of Internal Audit Findings
Student Chapter [Chair: Assoc. Prof. Dr. Lim Teck Hock]	
29th August	Memorandum of Understanding Signing Ceremony Between IMM and Universiti Tun Hussein Onn Malaysia (UTHM)
1st – 3rd November	Exhibition at KLESF (Kuala Lumpur Engineering Science Fair)

INSTITUTE OF MATERIALS, MALAYSIA

Materials Mind

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IMM CERTIFICATION SCHEMES

COATING APPLICATION & INSPECTION

- Coating Inspector Level 1
- Coating Inspector Level 2
- Coating Quality Control Technician
- Thermal Spray Coating Applicator
- IMM-SSPC C7 Abrasive Blasting
- IMM-SSPC C12 Spray Application
- B1B2 Assistant Blaster and Painter

COATING FINGERPRINTING

- Coating Fingerprint Quality Controller
- Coating Fingerprint Trainer

CORROSION PROTECTION

- Corrosion Technician Level 1
- Corrosion Technician Level 2
- Cathodic Protection Technician Level 1
- Cathodic Protection Technician Level 2
- Cathodic Protection Engineer
- Cathodic Protection Technologist

MECHANICAL JOINT INTEGRITY (MJI)

- MJI for Small-bore Piping, Tubing and Valves
- MJI for Flange Bolted Connections

THERMAL INSULATION

- Thermal Insulation Installer
- Thermal Analyst
- Thermal Analyst Trainer

VIBRATION TECHNOLOGY

- Vibration Practitioner Category 1
- Vibration Practitioner Category 2
- Vibration Specialist Category 3
- Vibration Specialist Category 4

WELDING INSPECTION

- Welding Inspector
- IMM-JWES Associate Welding Engineer
- IMM JWES Welding Engineer
- IMM-JWES Senior Welding Engineer

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IMM certified schemes are recognized in oil and gas, shipbuilding, construction industries etc. and by PETRONAS. Training courses for the related certification schemes are available at IMM Accredited Training Bodies.

IMM Competency Certificate holders are recognised as possessing supplementary knowledge in materials technology and engineering and are better placed for employment and usually enjoy higher remunerations.

For information on training and competency assessments contact IMM Secretariat.

www.iomm.org.my +6018 911 3480 secretariat@iomm.org.my Institute of Materials, Malaysia

January 2020 ***Issue 27***

Task Force on Coating Fingerprinting [Co-Chairs: Prof. Ts. Dr. Mohamad Kamal Bin Harun and Prof. Ts. ChM. Dr. Melissa Chan Chin Han]	
23rd January	Discussion with IMM Secretariat on Task Force on Coating Fingerprinting Activities
24th January	3rd Task Force on Coating Fingerprinting Meeting
1st March	1st Coating Fingerprinting Forum V Meeting
8th March	1st Workshop for Blasting and Painting on Polymeric Paint Samples
16th March	2nd Workshop for Blasting and Painting on Polymeric Paint Samples
18th March	Meeting on Collaboration with SIRIM STS Division for the Development of IMM Coating Fingerprinting Standard
26th March	2nd Coating Fingerprinting Forum V Meeting
4th April	Forum on "Towards Polymeric Coating Fingerprinting" V Big Wave
9th May	3rd Mock-Execution Subcommittee Meeting
15th May	3rd Workshop for Blasting and Painting on Polymeric Paint Samples
24th July	4th Task Force on Coating Fingerprinting Meeting
24th October (Morning)	Factory Visit to JOTUN
24th October	5th Task Force on Coating Fingerprinting Meeting
5th December	Meeting on Migration of IMM Standard to SIRIM Industry Standard with SIRIM STS Sdn Bhd
Task Force on Upskilling Sarawak Engineers & Technicians [Chair: Ir. Pau Kiew Huai]	
17th January	Task Force Meeting
7th March	Participated in one-day Conference on "Sabah Oil & Gas Skill Needs"
17th May	Task Force Meeting
Vibration Committee [Chair: Dato' Dr. Ir. Hj. Mohd Abdul Karim Abdullah]	
11 April	1st Vibration Committee Meeting
19 August	2nd Vibration Committee Meeting
13th – 14th November	International Applied Vibration Conference 2019 (IAVIC 2019)
Website Committee [Chair: Dr. Yong Soon Kong]	
8th January	Meeting with Website Committee
9th January	Performed troubleshooting of security threats on IMM website and email
15th May	Completion of the troubleshooting and maintenance of IMM website and website traffic
14th October	Handover meeting with IMM Secretariat on maintenance of IMM website, mobile phone, and all social media portals
15th October	Submission of final documentation for the application of eGHL online payment gateway to SMD Webtech (M)Sdn. Bhd
Welding Committee [Chair: Ms. Tan Su Anne]	
19th April	Memorandum of Understanding Signing Ceremony Between IMM and Prasarana Malaysia Berhad
24th April	Participation in Asia WeldTech 2019 Malaysia Seminar
25th – 26th April	Participation in Asian Welding Federation Council Meeting (Bangi, Selangor)
19th May	Common Welding Certification Schemes (CWCS) Taskforce Meeting and Magnetically Impelled Arc Butt (MIAB) Welding Workshop
17th August	Presentation of IMM and Welding Committee services at charity dinner organized by Kejuruteraan Kawan Lama Sdn Bhd
23rd – 24th October	Participation in Asian Welding Federation Council Meeting (Incheon, South Korea)
Young Professionals Committee [Chair: Mr. Mohd Fairuz Mohd Salleh]	
23rd February 2019	Certificate of Collaboration Signing Ceremony between IMM and Politeknik Kota Kinabalu
24th February 2019	Industrial Dialogue in conjunction with the TVET Career Carnival Sabah 2019 by Politeknik Kota Kinabalu
10th – 11th July 2019	Youth Forum on Technical and Vocational Education and Training (TVET) - In conjunction with the Sabah Oil & Gas Conference & Exhibition 2019 (SOGCE 2019)

Miri Chapter [Chair: Ir. Dr. Edwin Jong Nyon Tchan]	
9th March 2019	1st Miri Chapter Meeting cum Member Get-Together and Lantern Festival Dinner
13th – 14th April	Participation in the Sarawak O&G Seminar & Exhibition (SOGSE) 2019
18th May	2nd Miri Chapter Meeting cum "Buka Puasa Dinner" and Farewell Dinner to Curtin-IMM Student Advisor, Dr Sumaiya Islam
13th July	3rd Miri Chapter Meeting cum "Sarawak Day & Member Get-Together Dinner"
13th September	Opened a bank account in Miri to be used by Miri Chapter for all IMM related activities and projects
14th September	4th Miri Chapter Meeting cum "Malaysia Day & Member Get-Together Dinner"
2nd November	5th Miri Chapter Meeting for 2019 cum "Deepavali Celebration & Farewell Dinner for Assoc. Prof. Dr. Vincent Lee, Vice-Chairman"
6th – 8th November	Participation in 2nd International Conference on Materials Technology and Energy (ICMTE) 2019 at Curtin University Malaysia
Sabah Chapter [Chair: Mr. Zubaidi Abang Zamhari]	
10th – 11th July	Youth Forum on Technical and Vocational Education and Training (TVET) - In conjunction with the Sabah Oil & Gas Conference & Exhibition 2019 (SOGCE 2019)
Other Activities	
25th – 27th January	Participation of IMM Secretariat in "Bengkel Manual Akreditasi Program Teknologi dan Teknikal" by MBOT
25th January	Appreciation Dinner by Management Committee with IMM Past Advisor, Datuk Ir. (Dr.) Abdul Rahim Hashim
9th March	Participation of IMM Secretariat in "Program Taklimat Pengurusan Berkualiti" by ROS
22nd March	IMM 29th Annual General Meeting
8th May	Assessment of IMM members as Technologists (Ts) by the Malaysian Board of Technologists

3. HIGHLIGHTS OF ACTIVITIES IN 2019

FULL REPORT ON SECTION 3. CAN BE ACCESSED ELECTRONICALLY ON IMM WEBSITE (www.iomm.org.my).

4. SUMMARY AND MOVING FORWARD

The various expert and other working committees continued to play their roles effectively and carried out activities such as meetings, conferences and seminars, and collaborations. Nevertheless, the year 2019 was a challenging one for IMM with some new initiatives. The migration of training coordination to IMMR-CTU, the introduction of new certification programmes as well as the discontinuation of some legacy programmes, and IMM's commitment and efforts towards standardisation are all worthy of mention.

The IMM Management Committee and the IMM Council would like to express their sincere gratitude to all members of the Working Committees, Regional Chapters, staff of the IMM Secretariat and IMMR and other parties for their continuous effort and support in fulfilling the objectives of IMM.

To remain relevant and competitive, IMM will continue to keep moving forward with new initiatives and improving existing systems. We look forward to a successful 2020.

On behalf of the Council

Prof. Ts. ChM. Dr. Melissa Chan Chin Han

Honorary Secretary, IMM

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